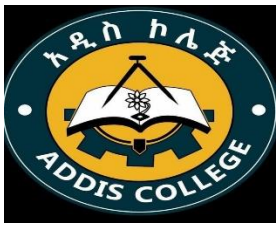

ADDIS COLLEGE

SCHOOL OF POST GRADUATE STUDIES

DEPARTMENT OF CONSTRUCTION TECHNOLOGY AND MANAGEMENT

ASSESSMENT ON THE IMPACT OF SCOPE CHANGE:

THE CASE OF KALITY DRY PORT AND TERMINAL PROJECT

BY

ASHENAFI ASSEFA ABERRA

ADVISOR: DAGNACHEW ADUGNA (PhD)

AUGUST 2024

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ASHENAFI ASSEFA ABERA

A thesis submitted to Addis College School of post Graduate in partial fulfillment of the requirements for the Master of Science in Construction Technology and Management.

August 2024

Addis Ababa Ethiopia

DECLARATION

I hereby declare that this thesis entitled, **"Assessment on the Impact of Scope Change: The case of Kality Dry Port and Terminal Project".** It was composed by myself, with guidance of my advisor, that the work contained herein is my own except where explicitly stated otherwise in the text, and that this work has not been submitted in whole or in part for any other degree.

Prepared by: Ashenafi Assefa Aberra

Signature: _____

Date: _____

August 2024

Addis Ababa Ethiopia

STATEMENT OF CERTIFICATION

This is to certify that Ashenafi Assefa Aberra has carried out his research work entitled "**Assessment on the Impact of Scope Change: The case of Kality Dry Port and Terminal Project".** This work is original in nature and is suitable for submission for award of a Master of Science in Construction Technology and Management

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APPROVAL PAGE

The following examiners have approved this MSc thesis entitled with **"Assessment on the Impact of Scope Change: The case of Kality Dry Port and Terminal Project"** after the presentation session.

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ABSTRACT

In project management, the project scope is the base of significant project planning processes such as estimating the cost, schedule and building work breakdown structure. Poor project scope definition directly affects project cost and schedule. Accordingly, dealing with unrealistic scope definition of cost and schedule may lead to failing a project. Besides, changes in project scope have a negative and positive impact on project success. Objective of this study is to assess the causes of predefined scope change and its associated impact on the project in the case of Kality port and terminal construction project. The researcher tried to strengthen the quantitative data with qualitative (primary data and secondary data) and just to make use of the benefit of method triangulation. Institutions selected to respond the research questions were Ethiopian construction design and supervision works corporation transport sector, Ethiopian shipping and logistics services and Altar general contractor are purposively selected using criteria that they should possess a hands-on experience in construction related issues. This study relied mainly on descriptive and exploratory research design, which enables to meet the objective. Data collected from both primary and secondary data sources. Data were analyzed using (SPSS) descriptive statistics like frequency, and Excel for relative importance index (RII). The major findings of predefined scope change causes and its associated impacts on the project in the case of Kality port and terminal construction project are need for better quality with RII = 0.90; delay in completion and increase project cost, and decrease project scopes with RII = 0.77. Many scholars agree that a change in scope of a project occurs for various reasons to keep the project on track a tight change control process shall be made. Once the changes are made, it is vital is to assess changes in the dimensions of the budget plan, the resource plan, and the project schedule and also if extra work is added to the project and it is not self-funding and more budget should be added to cover this increase in workload. The all stakeholders recommended to proceed other parts of the project that do not need project scope change to save time and minimize the cost of material increased due to market fluctuation.

Key Words: Assessment, Impact, Scope Change, Project, stakeholders

TABLE OF CONTENTS

LISTS OF TABLES

LISTS OF FIGURES

Lists of Acronyms and Abrivation

ADB	African Development Bank
CCP	Change controll process
ECDSWC	Ethiopian Design Supervision Works corporation
EEC	Ethiopian Engineering Corporation
ERP	Enterprise Resource Planning
FIDIC	Federation International Engineers Council
ILO	International Lobour Organization
IMF	International Monetary Fund
OPM	Organizational Project Institute
PMI	Project management Institute
PMBOK	Project management body of knowledge
WB	World Bank
WBS	Work break down structur

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Defining project scope using input from all stakeholders is a vital task that needs adequately carried out at the early stage. The purpose of project definition is to provide adequate information that needed to identify the work performed in order to avoid major changes that may negatively affect project performance (Gibson et al., 2006). This information needed before making the decision whether or not to proceed with the project execution (Kahkonen, 1999). While adequate front-end project planning with clear project scope definition can alleviate the potential for cost overrun, inadequate project planning and poor scope definition can lead to expensive changes, delays, rework, cost overruns, schedule overruns, and project failure. Changes often reflect the uncertainties that occur during the early stages of the project (Assaf & Al-Hejji, 2006). Changes are requested because of the different perspectives that each stakeholder has on the project. Therefore, having a well-defined project during the pre-project planning stage is crucial for successful project execution and for achieving a satisfactory project outcome. In the public sector, project definition is very crucial as projects serves communities first, and their satisfaction and comfort are the main concerns, while private sector projects often aim at benefiting investors or owners. Therefore, they should reflect their needs and requirements. In addition, this cannot done without involving all stakeholders in defining the project from early phases. It is irrational to get stakeholders' opinions about the project outcome after the completion, when their involvement is limited.

Incomplete project definition can occur when the input of one or more stakeholder is intentionally or unintentionally omitted, (Sharma & Lutchman, 2006), while at the same time inputs from others dominate. Failure to consider and clarify stakeholders' expectations and concerns at early stage in the project can result in extraordinary risks being ignored and may lead to difficulties in running the project, and hence poor performance (Atkinson et al., 2006). Therefore, project scope definition is critical for enhancing satisfaction of stakeholders as well as successful implementation of construction project (Heywood & Smith, 2006).

Kality port and terminal was established in 2014.It is located in Addis Ababa at Kality Sub City and occupies a total area of 37 hectare. The port has the capacity to accommodate 1241 TEU containers at a time and its annual container handling capacity has reached over 23,131 TEU. (ESLSE official Web site). Kality dry port and terminal compound is one of the eight dry port and

terminal compound owned by ESLS located in in the southern most suburb of Addis Ababa city, around Kality roundabout. It is specifically located in Akaki-Kality Sub-city inside Kality dry port branch kebele 11 and advantageously situated next to Addis Djibouti road close to the southern ring road, near by Addis Ababa's light train terminal destination at eastern edge of the country's capital city. It can accessed either via the Bole-Kality ring road or via the Stadium-Kality Main Arterial road.

The Ethiopian Shipping & Logistic Services (ESLSE) commissioned Ethiopian Construction Design & Supervision Works Corporation Transport Design & Supervision works Sector (ECDSWC, TS), currently re-brand the company name and logo to Ethiopian Engineering Corporation (EEC,TS) for consultancy services, detailed Engineering Design, Tender Document Preparations, construction supervision and contract Administration and awarded the project to Altar General Contractor in least bidder selection criteria.

Construction activities of Kality dry port and terminal project commenced in October 2021, with an initial contract amount of ETB 74,424,066.10, inclusive of 15% VAT and without provisions for price adjustments. The project originally scheduled for completion within 365 calendar days. However, shortly after the start of the access road construction, a significant change in scope occurred, shifting the main access road design from flexible to rigid pavement design. As a result, the initial contract value was revised to ETB 89,839,856.70, and the scope of the access road reduced by half to align the costs associated with the new rigid pavement design with the originally planned flexible pavement budget domain.

Despite 1,322 days having passed since the project began, progress remains below 30%. Additionally, the overall project cost has escalated from ETB 89,839,856.70 to approximately ETB 130million, excluding other project scope components such as three compound fences, two watchtowers, and the workshop area asphalt roads maintenance.

1.2 Statement of the Problem

Assessing predefined project scope change impact is consider among the important functions demanding mostly the critical planning of the project owner that affect the success outcomes of the completion of the project. Project suspension and failure linked to predefined project scope change have direct implications on the cost, delivery timeline and quality of the project. Global studies have also indicated that a poorly defined scope is among the main reasons for project

failure. According to the (Althiyabi and Qureshi, 2021), there is a solid relationship between project scope, schedule, and cost. Well-defined scope baseline deliver scope statement, WBS, and its associated WBS dictionary, which can be changed only through formal change control procedures(CCP) and is used as a basis for comparison. Based on this fact, project scope planning, scope definition and scope verification has a critical impact on the success of the organization's objectives and project goals. Nevertheless, numerous project owner are not aware of the serious parts of the predefined scope change and its impact on their project. Despite advanced project management methodologies, many projects across the world are not delivered within project time, budget, and scope for several reasons due to poorly project scope definition (Akhwaba, 2020).

Likewise Kality dry port access road and terminal compound construction project and its involved stakeholders is one of the study show case that imply the importance of understanding the impact of predefined scope changes and their implications. Kality dry port access road and terminal rehabilitation project in this regard highly affected by losing half lane of the road, following the change project coast increased by nine million , three years of construction delay, following the delay faces higher market price inflation, in consequence the contractor unable to provide construction material due to financial constraint. At the end, due to absence of liquidity the project, contractor has susceptible to organizational bankruptcy and the project up to August (2023), suspended in >30% progress. Moreover, due to the demolished access road for re-construction, the port compound unable accommodate safe terminal services for its import and export high bed and low bed track. So, this study find the cause of project scope change, the impacts on the project and stakeholders and to suggest the potential strategies to minimize the impacts of scope change.

1.3 Objective of the Study

1.3.1 General Objective

The general objective of this study is to assess the causes of scope change and its associated impact on the project in the case of Kality port and terminal construction project.

1.3.2 Specific Objectives

The specific objectives of this study includes:

1. To identify the causes of project scope change in Kality dry port construction project.
2. To assess the impact of scope change on the Kality dry port construction project.
3. To investigate the effect of scope change on project parties.
4. To outline potential strategies that can take to minimize the negative impact of scope change in a given project.

1.4 Research Questions

1. What are the causes of scope change on the Kality dry port construction project?
2. What are the impacts of scope change on project?
3. What are the effect of scope change on project parties?
4. How are the possible strategies that can take to reduce the negative impact of scope change?

1.4 Scope of the Study

1.5.1 Thematic Scope

This study aimed to assess the impact of predefined project scope change and identified the main causes of the change, and assessed their impacts on project time and cost in the Kality Dry port and terminal construction project. Finally, it can help to identify possible solutions to the problem, such as better planning, designing, communication and setting strategies for change management technique between stakeholders.

1.5.2 Spatial scope

This study focused on Kality dry port and terminal construction project and it provided insights into the failure of the project. It also used to recommend on how to improve future projects performance by withstanding or reducing the negative consequences of the scope change impact at the compound as well as recently planned to constructed at Hawassa's and Jimma's ports to take valuable lessons of this particular study.

1.6 Significance of the Study

The significance of this study is to highlights the importance of understanding the causes and impact of scope changes of Kality Dry Port and Terminal construction activities. By studying the root causes and consequences of scope change, the employer ESLSE can learn valuable lessons and can be an input for future decisions. Additionally, it can help stakeholders involved in construction sector, such as clients, consultant, and contractors, to better define their needs and requirements before the procurement process begins by clearly defining their expectations and specifications to minimize the chances of scope changes occurring in the future.

Furthermore, the study emphasizes the need for a predefined change management mechanism in construction projects. By having a structured process in place to handle scope changes, construction companies can effectively manage any unexpected modifications that may arise during the project. This can help prevent delays, cost overruns, and other negative impacts on the construction process.

The study also contributes to improving the efficiency and effectiveness of construction projects by highlighting the significance of understanding and managing scope changes.

1.7 Limitation of the study

The major limitation of this study is limited to the specific one project, which may not cover even the ongoing project in the compound, in the wereda and the city projects due to time and cost limitation. Also lack of awareness among the professionals while giving the questionnaire paper and scarce of similar research done on predefined scope change in national context on dry port and terminal construction project. However, recognizing these limitations, the researcher attempted to overcome them by suitable use of primary data through administered questionnaire and interviews with higher position experts' guidance.

1.8 Organization of the Paper

The study consists of five chapters. The chapters contains; Chapter one introduction, this section was introduces the study topic and background of the study. It consists of the study background, research problem, research questions, research objectives, research scope, and research significance. Chapter two contains the literature review, this chapter reviews about Predefined scope change, its management during implementation, construction progress in dry port

construction. The chapter also focused on identification of the research gaps that have not discussed by former researchers. Chapter three contains the Research methodology, such the chapter discussed on research approach and strategies, and the procedures to adopt in conducting the research. This includes; research approach and design, data collection techniques used. It also discussed data analysis and interpretation techniques. Chapter four data analysis and discussion, this chapter presented data obtain from questionnaires, make analysis and interpretation of data and discussed the result from the survey conducted. The chapter also discussed on the findings obtained from the analysis, which forms the basis of recommendations for future research. Chapter five contains conclusion and recommendations. This is the last chapter in the research and summarized the entire research work was conducted where conclusion was made. The recommendation also gave based on the research subject matter for possible action taken.

CHAPTER TWO: LITRATURE REVIEW

2. Introduction

In this chapter, the researcher will try to assess and present the previously conducted research in related with construction project scope project change management and predefined scope change with their research finding from the international and national standard manuals, directive, annual reports, construction management books and international published journal will be assessed and compile here under.

2.1 Theoretical Basis of the Study

According to (Ofori, 2018), that the construction industries of all countries face many difficulties and challenges. The economies of many developing countries currently confronted by severe difficulties owing to a combination of lower commodity prices, higher energy costs, falling exchange rates and rising inflation. At the same time, the countries face immense social problems (including a rising urban population and unemployment) which are putting pressure on the nation's resources and capabilities. However, the problems facing the construction industries of the developing countries are infinitely more fundamental, more serious and more complex, and their solution much more pressing than those confronting their counterparts elsewhere are. Therefore, skill leadership is vital in defining a construction project vision, scope, and managing stakeholders throughout the project life cycle (Akhwaba, 2020).

In light of this, Construction projects have great potentials to contribute to the socio-economic development of any nation as a driver of growth. In United States of America, construction industry is the biggest sector. In United Kingdom, the industry is second to the health industry. In Brazil, construction industry is the third biggest sector after agriculture, and banking and finance (Oyedele and Oyedele, 2016). The global construction market is worth around US $3,200 billion per year. This market represents 5–7 per cent of GDP in developed countries and around 2–3 per cent of GDP in lower-income developing countries and out of this US alone invest $250 billion is spent annually on infrastructure in the developing world alone. Construction industry in many developing countries, plays a vital role in driving socioeconomic development of the nation (Muhammed et al., 2022). The construction sector, other than the least developed countries, their local construction industries have the lions share in market opportunities Ministry of Urban

Development and Construction, (2012). In many countries construction contributes a significant percentage of gross domestic product (GDP) and offers jobs to a significant proportion of the migrant working population (By et al., 2015) . However, in most developing nations, with huge infrastructure deficit, the construction industry is not developed. Despite recent economic and financial crisis which affected most developed economies (Oyedele and Oyedele, 2016), Construction projects have a tremendous impact on the economy, the environment, and society on a global scale, accounting for around 6% of global GDP, Report (2022).

Although, Sub Saharan African countries ranks at the bottom of all developing regions in virtually all dimensions of infrastructure performance, Paper (2018), in a year 2015/16 they registered relatively stable growth. During this period, Ethiopia has experienced average annual growth rate of 8 percent. The growth in real GDP was mainly attributed to 8.7 percent growth in services, 2.3 percent in agriculture and 20.6 percent in industrial sectors, Report (2022.).To support the economic growth and upgrade economic infrastructure, the construction sector has played a significant role in building a series of investment programs in energy, transport (road and rail) , telecommunications, and a multi-modal transportation (dry port) system, (By et al., 2015).

In regard with this, Ports well known as playing an important role in multimodal transport systems, apart from their traditional role as clusters of economic activities. Multimodal transport and dry ports construction first introduced in USA and developed Europe, followed by East Asian Countries and then more recently Africa.

2.2 Definition

2.2.1 Project

According to (Khahro et al., 2017) Project is a sequence of unique, complex, and connected activities having one goal or motive and that ought to be finished via way of means of a particular time, inside budget, and in line with specification. The term project takes three components: product, service and result.

In the same way PMI, PMBOK, (2017) define project as a temporary endeavor undertaken to create a unique product, service, or result. A project is undertaken to fulfill objectives by producing deliverables so that, the outcome toward which work is to be directed, a strategic position to be attained, a motive to be achieved, an end result to be obtained, a product to be produced, or a task

to be performed. A deliverable is defined as any unique and verifiable product, result, or capability to perform a service that is required to produce to complete a given scope.

2.3 Port

According to (Cullinane et al., 2012) definition, a dry port, also known as inland port or intermodal terminal, is an inland intermodal terminal directly connected to a seaport by rail or road. It serves as a hub for the transshipment of goods between different modes of transportation, such as ships, trains, and trucks. Dry ports facilitate the movement of cargo to and from the hinterland, reducing congestion and costs at seaports and improving the efficiency of the supply chain. They also provide value-added services, such as warehousing, customs clearance, and distribution.

However Southeast of Scotland Transport Partnership and the Transport Research Institute at Edinburgh Napier University jointly organized the 'Dry port Conference' in Edinburgh in October 2010 and reached no clear consensus has been produced as to an unequivocal definition of a 'dry port'. The conference does highlight the diverse range of possible 'dry port' scenarios, with the 'extended gate' form emerging as the ultimate manifestation of the 'dry port' concept.

2.3.1 History of Dry Port in the World

The concept of dry ports originated in Europe in the 1960s and 1970s, when there was a need to handle increasing container traffic from seaports to inland areas (Roso et al., 2009).The first dry port was established in 1966 in Duisburg, Germany, which was connected to the port of Rotterdam by rail. In the United States, the development of dry ports began in the 1980s, when the intermodal transportation system introduced. The first dry ports in the US established in Chicago in 1984, which connected to the port of New York and New Jersey by rail.

In Asia, the first dry port established in Japan in 1971, which was connected to the port of Yokohama by rail. Since then, many dry ports have been established in Asia, especially in China and India, to handle the increasing container traffic from seaports to inland areas (Styliadis and Chlomoudis, 2021).Today, dry ports are an essential part of the global supply chain and are used in many countries around the world. They play a crucial role in facilitating international trade and commerce by providing efficient and cost-effective logistics solutions.

2.3.2 History of Dry Port in Africa

According to (Olukoju, 2020) research finding, Port development was aligned with railway and road construction. Opened in 1866, Dakar was the chief port of French West Africa. The port served by a major railway line opened in 1885, running northwards to the port of Saint Louis and eastwards towards Bamako in Mali. When the researcher further explain Takoradi, the first major seaport of the Gold Coast (modern Ghana), was opened in 1928. An eastern railway line constructed in 1923 to harness the minerals and cocoa of the hinterland preceded it, however. In Nigeria, both seaport development and railway construction commenced in the 1890s, (Olukoju, 2020)

As many literature indicated, (Werikhe and Zhihong, 2015) also highlighted that dry ports were introduced as a way of accessing the hinterland and also reduce the pressure on the bottle necked, congested and inefficient sea ports, Development of Africa's Dry Ports and Their Role in the Global Supply Chain,(2023). The adoption of dry port concept began in Europe and North America, followed by Asia, South America and then Africa. The concept of dry ports in Africa relatively new compared to other regions of the world. The concept of dry ports in Africa relatively new compared to other regions of the world. The first dry port in Africa established in 1998 in Mombasa, Kenya, which connected to the port of Mombasa by rail. This was followed by the establishment of dry ports in other African countries such as Tanzania, Uganda, and Ethiopia (Gauteng, 2019). Mombasa and Dares Salaam Sea ports found in Kenya and Tanzania respectively are the current gateways to East Africa from the Indian Ocean, although a third Sea port in Lamu (Kenya) is under construction by China Communications construction Company in a deal worth $478.9 million to directly link the coast, Kenya, Ethiopia and Southern Sudan (Gauteng, 2019).

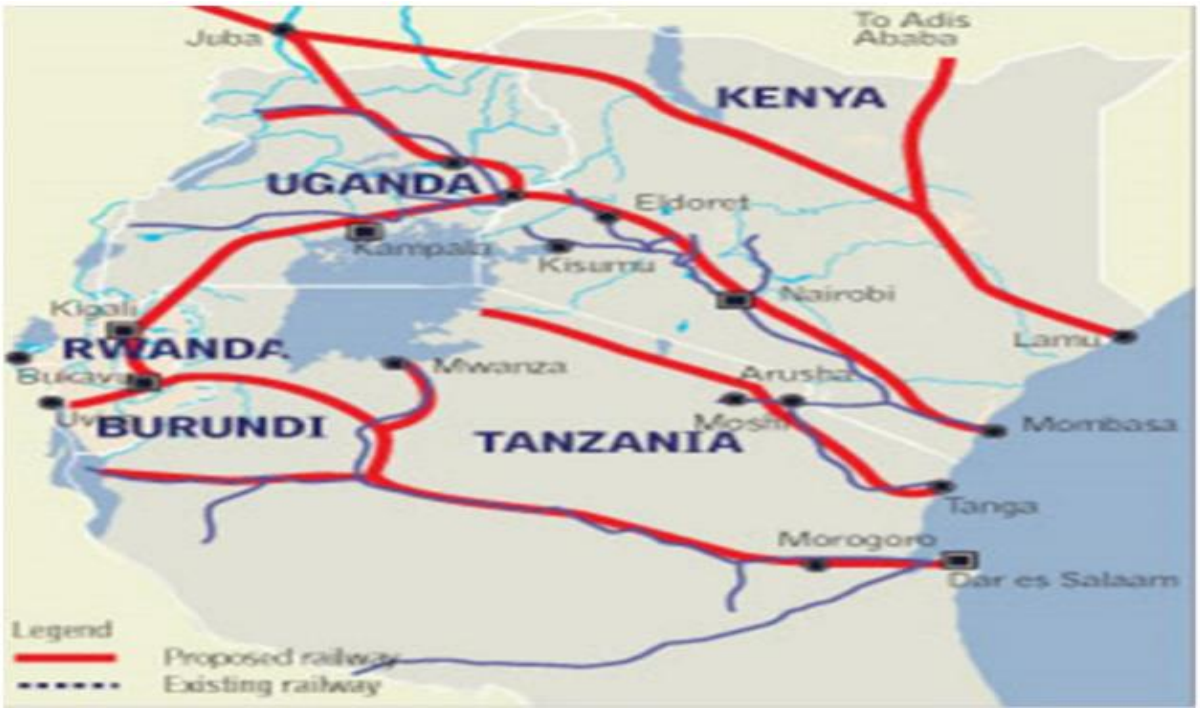

Figure: 2.1: East Africa dry port route map, (Source East Africa dry port route history, 2020)

The development of dry ports in Africa has been driven by the need to improve the efficiency and effectiveness of the transportation and logistics systems in the region (Nguyen et al., 2021). The high cost of transportation and the lack of adequate infrastructure have been major challenges to the growth of trade and commerce in Africa. Despite the fact that, Africa's dry port network is rapidly advancing (Nguyen et al., 2021), as part of a continental effort to increase freight movement between sea and land and tackle logistics constraints; particularly for landlocked nations, (Tadic et al., 2019). Many landlocked developing countries regularly face physical isolation, supply chain-related barriers from the sea, and high trade costs with the rest of the world. For these reasons, landlocked countries are making deals with their neighbors to set up dry ports near their coastlines. Botswana, for example, operates the Botswana Dry Port in the Namibian port of Walvis Bay, providing the country with a direct link to the sea. Ethiopia completed the construction of its dry port in 2021, a USD 3 million facility built to facilitate trade with neighboring Sudan. There are now more than 40 dry ports and inland container depots in African countries; a number that is higher than any other continent, Development of Africa ' s Dry Ports and Their Role in the Global Supply Chain (2023).

Locating a dry port depends on various criteria such as distance, modes of transport, cost associated, environmental, geographical, and social concerns. Dry ports have helped to address

these challenges by providing a cost-effective and efficient means of transporting goods from seaports to inland areas (Mohan and Naseer, 2022). They have also helped to reduce congestion at seaports, improve the speed of cargo clearance, and enhance the security of goods in transit.

Today, dry ports are an important part of the logistics infrastructure in Africa and playing a key role in facilitating international trade and commerce. With the increasing demand for goods and services in the region, the development of dry ports is expected to continue to grow in the coming years (Gauteng, 2019).

2.3.3 History of Dry Port in Ethiopia

The first dry port in Ethiopia established in 2009 in Modjo, located about 70km southeast of Addis Ababa. The Modjo Dry Port was built with the aim of reducing congestion at the Port of Djibouti, which is the main gateway for Ethiopia's international trade (Gauteng, 2019). In 2016, a second dry port opened in Kombolcha, located about 380km northeast of Addis Ababa. The Kombolcha Dry Port built to serve the northern regions of Ethiopia and provide a more efficient and cost-effective means of transporting goods from the Port of Djibouti. The development of dry ports in Ethiopia has been a key strategy in the country's efforts to improve its logistics infrastructure and promote economic growth. In addition to reducing congestion at seaports, dry ports have also helped to create jobs and stimulate local economies in the areas where they are located.

The Ethiopian government has plans to build additional dry ports in other parts of the country, including Hawassa, Woreta and Jimma (የኢትዮጵያ የባህር ትራንስፖርትና ሎጅስቲክስ አገልግሎት ድርጅት ፕሮፋይል, 2011). These new dry ports expected to further enhance Ethiopia's logistics capabilities and support the growth of its export-oriented industries.

2.4. Terminal

According to oxford, dictionary definition, terminal is a building or set of buildings at an airport where passengers arrive and leave. A truck rail terminal is a facility where trucks and rail can load and unload goods. Terminal is a place where goods and passengers arrived and leave. It may also provide services such as fueling, maintenance, and parking for trucks. Truck terminals are often located near major highways and transportation hubs to facilitate the movement of goods and it owned and operated by private companies or government agencies.

2.4.1 History of Terminal in the World

The history of dry port terminals dates back to the early 20th century when the use of trucks for transportation began to increase rapidly. Prior to this, railroads were the primary means of transporting goods over long distances. However, with the development of more powerful and efficient trucks, they began to replace trains as the preferred mode of transportation for many types of goods. The first truck terminals were simple facilities that provided a place for trucks to park, load, and unload goods. They were often located near railroad stations and other transportation hubs to facilitate the transfer of goods between different modes of transportation.

As the transportation industry grew, so did the size and complexity of terminals. Many terminals began to offer additional services such as fueling, maintenance, and repair. Some even included restaurants, motels, and other amenities for truck drivers who needed to rest or wait for their shipments to be loaded or unloaded. Today, terminals are an essential part of the logistics infrastructure that supports global trade and commerce. They play a critical role in ensuring that goods transported efficiently and reliably from one location to another.

Truck terminals are particularly important in dry ports, which are inland intermodal facilities that provide access to seaports for the efficient movement of goods. In a dry port, containers transferred between different modes of transportation, such as ships, trucks, and trains. Truck terminals in dry ports provide a crucial link between the port and the final destination of the goods. They serve as a hub for trucking companies, freight forwarders, and other logistics providers to coordinate the movement of goods to and from the port. At a truck terminal in a dry port, containers are unloaded from ships and transferred onto trucks for transport to their final destination. Similarly, trucks carrying containers from inland locations can drop off their cargo at the terminal to be loaded onto ships for export.

Truck terminals in dry ports also provide additional services such as customs clearance, warehousing, and distribution. This helps to streamline the movement of goods and reduce the time and costs associated with transporting them. In order to effectively, carry out this all activity the terminal infrastructure shall should well furnished. In general, truck terminals are an essential component of dry ports and play a critical role in facilitating international trade and commerce.

2.4.2 Terminal in Ethiopia

Ethiopian truck terminals are essential components of the country's transportation infrastructure. They used for loading and unloading goods transported by trucks and other vehicles. The history of Ethiopian truck terminals dates back to the 1960s when the country started developing its road infrastructure.

During that time, the government of Ethiopia established a state-owned logistics company called the Ethiopian Shipping Lines and Logistics Services Enterprise. The ESLSE was responsible for managing the country's ports, shipping lines, and trucking services (የኢትዮጵያ የባህር ትራንስፖርትና ሎጅስቲክስ አገልግሎት ድርጅት ፕሮፋይል, 2011). The first Ethiopian truck terminal was built in Addis Ababa in the 1970s. The terminal designed to accommodate the growing number of trucks transporting goods to and from the city. Over the years, more truck terminals built in other cities and towns across Ethiopia now days. Today, Ethiopian truck terminals are modern facilities equipped with advanced loading and unloading equipment. They are strategically located near major highways and transport hubs to ensure efficient transportation of goods across the country

2. 5 Scope change

Construction projects are very complex in nature (Khoso et al., 2019). Each activity involves multiple varying tasks, and many factors and variables have a significant role at any stage of the project. In this regard, in any construction project, the term "change" refers to a set of instructions that allows modifications, additions, and contract agreement deletions as an expression of the size and scope of work or nature of the task to be carried out(Ahmed et al., 2022). However, Scope change can also be defined as an addition, deletion, or alteration of the work that was established in the later stage of construction phases (Khoso et al., 2019).Thus, defining the scope of projects in precise terms at the preconstruction phase will determine their effective implementation in the construction phase (Khahro et al., 2017). In the meantime, among nine of one Project management Knowledge area, describes the process required to ensure that the project includes all the work required, and only the work required, to complete the project successfully. It consists of initiation, scope planning, scope definition, scope verification, and scope change control. Unclear or poor scope planning, definition, verification and change control led to frequent design and schedule change, consequently incomplete project BID documents and improper communication exposed the project to cost, time, quality, safety and performance overruns (Lotffy, 2019).

2.5.1 Causes of Project Scope Change

The main causes of construction changes are Investor's/Client requirements for higher standards in relation to those planned to realize in the execution phase of a construction project. Partially incomplete project documentation, Change of technology caused by lack of availability of designed technology in the market (Nahod et al., 2012). The other special causes that cause cost and time overruns of projects are, change of schedule, ambiguous design details, change of plan or scope, conflict between contract documents, lack of coordination, safety considerations, client financial problem, change in design by consultant, equipment unavailability, poor workmanship socio-cultural factors, and change in government regulations (Khahro et al., 2017).

2.5.2 Classification of Changes

Change is a common denominator in all construction projects, even though the size, scope, and complexity of projects may vary significantly from case to case. Some project scope change is the complete original scope change in the conception of the contract or the date of completion. However, According to (Bitamba et al., 2020), the different additions, modifications, and deletions of project objectives or scope adopted during the construction project progress are considered to be a change that may have both positive and negative impacts on the project output. Based on the positive and negative effects of changes in the construction projects, two principal types of changes defined as beneficial and detrimental changes. The beneficial changes can implemented by the practice of value management. These changes further contribute to the analysis of reactive and proactive changes Reactive changes place construction projects at an initially expected level of performance, while proactive changes seek to improve the project performance and attain the targets initially (Sohail, 2019). On the other hand, detrimental changes have a negative impact on project performance and adopted to compromise the financial value of the client. These changes are generally determined to replace high-quality, standard, and expensive materials with sub-standard and cheap materials when the client faces financial difficulties. The detrimental changes lead to uncertainties and interfaces that contribute to the generation of non-viable activities such as modifications and reworks (Bitamba et al., 2020).

In general, classification to use for a wide range of both project contract and service contract, it seems fruitful to distinguish between client origins, supplier origins and external origins of reasons for changes. Within these three major groups further categories can be identified as (Brochner and Badenfelt, 2015) explained.

2.5.3 Client Origin Change

This category of changes originating with the client is due to high initial search or information costs for the client; consequently, and unintentionally, the original contract documentation from the client may contain errors, omissions and contradictions in specifications.

2.5.4 Supplier Origin Change

This category is when the client finds that the primary business to support by the project or service contract has changed its needs in a way unforeseen in the original contract. This category often referred to as scope issues.

2.5.5 External Origin Change

These groups of change categories refers to those arising from causes that are external to the parties to the contract. External causes can be of natural origin or societal. So there may be unexpected natural events, although many such risk are routinely allocated to the client in a force majeure clause of the contract and thus in most case will not lead to any contractual changes. Finally, there are the external disruptions of societal or human origin, such as unexpected legal changes, political turmoil and labor unrest.

Table 2.1: Studies used to understand cause of scope change

Stage	Stakeholders	Types of change	Impact	Action
Specification	Owner/Client/User or architect	Changes to requirements including specification, scope of projects, design brief, etc.	Changes in design and construction processes	Carefully provide detailed specification documents before bidding
Design	Design/engineering Consultant	Incomplete/inconsistent drawings; design error/defect; design change; omissions of site	Rework of design and drawing; rework in	Better control of design versions, drawings; site investigation;

		conditions and buildability; changes in codes and regulations	construction; change orders	consider buildability in design
Construction	Contractor /subcontractors	As-built not confirm with as-design; quality defect; unanticipated site conditions; value engineering; materials or equipment not available; inclement weather	Rework; change orders; changes in design	Quality control; site operational control; coordinated documents and drawings; daily logs

(Source: Hao, Shen , Neelamkavil and Thomas ,2019)

I. **Changes in project requirements**: As the project progresses, new requirements may emerge or existing requirements may change. This could be due to changes in regulations, client needs, or other factors.

II. **Unforeseen conditions**: During construction, unforeseen conditions such as soil instability, hidden utilities, or unexpected weather events may arise, which require changes to the scope of work.

III. **Budget constraints**: If the project budget reduced or if unexpected costs arise, the scope of work may need to adjust to stay within budget.

IV. **Schedule changes**: Delays or accelerations in the project schedule may require changes to the scope of work to ensure that the project completed on time.

V. **Design errors or omissions**: If errors or omissions discovered in the project design, the scope of work may need to adjust to correct these issues.

VI. **Stakeholder input**: Input from stakeholders such as customers, local communities, or regulatory agencies may lead to changes in the project scope to address their concerns or preferences.

2.5.6 Impact of Scope change in Developed Country

In developing countries, the impact of construction scope changes can be even more significant. These countries often have limited resources and infrastructure, making it more challenging to manage and mitigate the impacts of scope changes. One major impact of construction scope changes in developing countries is budget. Limited funding sources and financial constraints may make it difficult to absorb additional costs resulting from scope changes. This can lead to delays or even cancellation of the project, which can have significant economic and social impacts. Another impact of construction scope changes in developing countries is safety as (Anfrage, 2023) studies explained limited resources and capacity may result in compromises in safety standards, which can put workers and the community at risk. Changes in design or requirements may also result in shortcuts that compromise the safety, durability, or functionality of the final project out comes.

In addition to budget and safety impacts, construction scope changes in developing countries can also influence the environment. Limited environmental regulations and enforcement may result in environmental damage or degradation because of changes in project requirements or design. Hence, managing construction scope changes in developing countries requires a comprehensive approach that considers the economic, social, environmental, and safety impacts. According to the world labor organization (ILO), the impact of occupational health and safety hazards faced by construction workers in developing countries is 10 to 20 times than those in industrial countries. (Tadesse and Israel, 2016) further explained that among 44.66% occupational injury in Ethiopia the highest prevalence of occupational safety injury was reported from the construction sites (50.8%) in particular of the Addis Ababa city administration respectively. Effective stakeholder engagement, contingency planning, and capacity building can help minimize the impacts of scope changes and ensure successful project outcomes (Tadesse and Israel, 2016).

2.5.7 Impact of construction scope change in Ethiopia

In Ethiopia, construction scope changes can have significant impacts on the country's economy, social well-being, and environment. According to Construction Environment , Safety & Health Manual (2023). The country is still developing its infrastructure and has limited resources and funding sources to support construction projects. One major impact of construction scope changes

in Ethiopia is budget. The country's economy heavily relies on agriculture (Falcioni, 2015), and the government has limited funds to invest in infrastructure development. As a result, additional costs resulting from scope changes can cause delays or cancellation of the project, which can have significant economic impacts. For instance, In Addis Ababa City Akaki Beseka to Akakie Ring Road Round About road, Lamebert to Kotebe Teachers College, Kotebe to Amanuel and Weyra to Betel Road projects are a few live negative economic impact indicator in consequence of scope change. Another impact of construction scope changes in Ethiopia is safety. The country has limited capacity and resources to accommodate scope change and enforcing safety standards, that why construction safety and health is becoming amongst the major public health problems that causes an estimated economic loss of 5–10% growth national product beyond its increased risk of fatality and morbidity rates in which 14 death reported per 100,000 workers.

According to (Ashuro et al., 2021) in Ethiopia, reports indicated that only 5 to 10% of workers have access to occupational health services in their respective workplaces. As mentioned earlier, occupational injury has direct economic costs, have a wide range of social consequences including both psychological and behavioral responses for the worker, family and for the community at all. Beyond its chronic consequences of disability, it has also tremendous impact on economy at individual, household and national level. Changes in scope/design or requirements may also result in shortcuts that compromise the safety of the construction material and a construction site left open without proper warning sign and sufficient protection (Tessema et al., 2022).

In addition to budget and safety impacts, construction scope changes in Ethiopia can also affect the environment. The country is already facing environmental challenges such as deforestation and soil erosion, and changes in project requirements or design may exacerbate these challenges. In general, managing construction scope changes in Ethiopia requires a comprehensive approach that considers the economic, social, environmental, and safety impacts. Effective stakeholder engagement, contingency planning, and capacity building can help minimize the impacts of scope changes and ensure successful project outcomes (Tafesse et al., 2022)

2.5.8 Potential strategies to prevent scope change

Establish a clear Scope: As of many study finding the first step in managing scope changes is to have a clear understanding of the project scope. This includes outlining the project goals, objectives, deliverables, and timelines. According to (Bitamba et al., 2020) a clear understanding

of the project scope change allows stakeholders involved in the project have a shared understanding of what is included and excluded in the project, what the project goals and objectives are, what deliverables are expected, and what the timeline for completion is.
(Bitamba et al., 2020). This understanding is important because it helps ensure that everyone is working towards the same goals and expectations, and allows for effective communication and decision-making when changes to the scope of the project occur.

Establish a change control process: A change control process is the key to managing scope changes. Based on (Nahod et al., 2012) an appropriate change control process should outline the steps that need to be taken when a change request is submitted, and who needs to be involved in the decision- making process. The change control process is a formal process that used to manage and control changes to the project scope. It involves documenting the proposed changes, assessing their impact on the project, and making decisions about whether to approve or reject them. The process also includes communicating any approved changes to all stakeholders, updating project plans and schedules, and monitoring the progress of the project to ensure that it stays on track (Fashina et al., 2020).

The change control process is appropriate because it ensures that any changes to the project scope carefully evaluated and only approved if they are necessary and beneficial to the project. It helps prevent scope creep, which can lead to delays, increased costs, and a failure to meet project goals. By following a formal change control process, project managers can make informed decisions about whether to approve or reject proposed changes and ensure that all stakeholders are aware of any changes that are made (Coutts, 1997). This helps to keep everyone on the same page and ensures that the project stays on track towards its goals.

Communicate Effectively: communication is key when it comes to managing scope changes. All stakeholders should kept informed of any changes that occur and the impact they may have on the project. Communication is a critical component of managing scope change because it helps to ensure that all stakeholders are aware of any proposed changes and their potential impact on the project. Effective communication can help to prevent misunderstandings and ensure that everyone is working towards the same goals. According to (Taleb et al., 2017). Here are some ways that communication can be useful in managing scope change:

a) Keeping stakeholders informed, Communication can help to keep stakeholders informed about any proposed changes to the project scope. This can include updates on the status

of the project, any risks or issues that have arisen, and any proposed changes that may affect the project.

b) Gathering feedback: Communication can also use to gather feedback from stakeholders on proposed changes. This can help to ensure that any concerns or objections addressed before a change approved.

c) Explaining the rationale for changes: Communication can help to explain the rationale for proposed changes, including why they are necessary and how they will benefit the project. This can help to build support for the changes among stakeholders.

d) Updating project plans and schedules: Communication is also important for updating project plans and schedules to reflect any approved changes. This helps to ensure that everyone is aware of any changes and is working towards the same goals.

Hence, effective communication is essential for managing scope changes because it helps to ensure that everyone is informed and working towards the same goals. By keeping stakeholders informed, gathering feedback, explaining the rationale for changes, and updating project plans and schedules, project managers can help to ensure that any changes to the project scope carefully evaluated and approved only if they are necessary and beneficial to the project. This helps to ensure that unnecessary changes made and that any changes are in line with the overall goals of the project. Additionally, effective communication can help to ensure that any changes implemented in a timely and cost-effective manner.

I. **Prioritize Changes**: Not all scope changes created equal. Some changes may be more critical than others, so it's important to prioritize them based on their impact on the project (Khoso et al., 2019).

II. Monitor Progress: Regularly monitoring progress can help identify potential scope changes early on. This allows for proactive management of the changes, rather than reacting to them after they have occurred. Monitoring the progress of a project is essential because it helps to ensure that the project is on track and that any issues or risks are identified and addressed in a timely manner (Ahmed et al., 2022). This involves setting milestones and reviewing them regularly. Regular progress reviews also allow quick action to taken if any issues arise. Regular feedback from all team members also helps to identify areas of improvement to ensure that the project is successful. It also helps to maintain motivation and morale among the team. This, in turn, helps to ensure that the project completed on time and within budget. Regular performance reviews also enable senior management to have visibility of the progress of the

project. This ensures that any necessary resources provided to enable the project to complete on time. Furthermore, it allows strategic decisions to taken to ensure that the project remains on track.

III. **Document Everything**: All changes to the scope should documented, together with the justification, the effect on the project, and any costs incurred. The use of this paperwork can help decision-making and guarantee that all interested parties in agreement. Here are some ways that documentation can be useful in managing construction project changes (Gunduz and Naser, 2022)

a) Establishing clear expectations: Documenting changes to scope and other project details helps to establish clear expectations among all stakeholders involved in the project. This can help to prevent misunderstandings and ensure that everyone is on the same page.
b) Managing risk: Documentation can also help to manage risk by providing a record of all project changes and decisions. This can help to prevent disputes and legal issues that may arise due to miscommunications or misunderstandings.
c) Building trust: By documenting everything related to the project, construction teams can build trust with clients and other stakeholders. This can help to establish long-term strategic relationships that may lead to future projects.
d) Improving communication: Documentation can also improve communication between all stakeholders involved in the project. By providing a clear record of all project changes and decisions, construction teams can ensure that everyone is informed and up-to-date on the status of the project.

2.6 Impact of scope change on projects

In 2014, Global PPM survey indicates that poor estimates in the planning phase (39%) and changes in scope mid-project (41%) were reported as the top two reasons for project delays. A study by (Gobeli and Larson, 2015) on the other hand found that approximately 50 per cent of the planning failure relates to unclear definition of scope and goals. Other studies also suggested that there is a strong correlation between project success, success on the three-criterion cost schedule and quality, and clear definition of scope.

2.7 Empirical Review

(Komal et al. 2019) proved that inability to manage scope change leads to project failure, more than 80% of software project failed as the result of poor controlling of scope change. Nevertheless, numerous organizations are not aware of the serious parts of scope change, hence conducted study

contributes to decrease the chances of projects failure by identifying and analyzing the critical factors that are responsible for scope change proved by using a systematic review based on 29-selected paper. However, there is a need to observe the impact of identified factors on real projects due to the absence of observation proof available in the reviewed literature.

An improvement of Earned Scope Management (ESM) strategy for measuring and checking project performance is a technique proposed by (Valdes, 2019) by enabling the use of the exertion and the people as a resource in the project. Project scope is considered as one of the critical factors that affect project success, although, there is a lack of scientific researches being done on scope techniques for monitoring and controlling scope constraints. Therefore the proposed improvement of ESM contributes to improving project performance hence, prevent project failure. Nonetheless, it is important to integrate ESM with Earned Value Management (EVM) primary factors (cost and schedule) to achieve an accurate result and full status of project performance.

(Hassan et al. 2017) presented a method to evaluate the completeness of scope definition. The well-defined scope contributes to project success. There are several tools used for measuring and verifying product scope definition, and control scope changes. Besides, there are no specific tools used to gauge completeness and quality of scope definition. Therefore, the proposed method promoted the quality of the completeness of the project scope definition and provided more control of its work. However, the evaluation method was applied on three software projects only, which is an insufficient number to obtain a confident result. How appropriate methodology and tools of change management positively impact improvement projects for success. A large number of organizations facing challenges on improvement for success and applying changes that must implemented, numbers methodologies used for problem solving. However, it is not sufficient to have a huge achievement without a process integrating with the approaches for address the problems for changing.

(Xiong et al., 2016) conduct a case study to prove that the methodology used in scope change management empowers achievement changing from improvement project theoretically through problem solving methodology. Besides the above, the study should expand the relative application in more different organizations to obtain the most satisfying result.

(Israeli and Gonen, 2018) discussed the coherence relation between them. Nowadays organizations consider knowledge management as one of the significant resources, sharing knowledge contributes to project success. On the other hand, not all organizations are aware of how exchanging knowledge management can lead the project to success; hence they are not

assimilating a culture of remuneration or invest in sharing knowledge. The proposed study focused on the impact of knowledge management on project success from multiple perspectives. However, it was proved by using online questionnaires, in addition, the number of variables on the study was quite large, therefore increasing the sample may positively support the results.

(Dludhlu et al., 2017) conducted a study for "Risk Evaluation in Project Management Implementation: The Case of Infrastructural Development Projects". The risk management process is significant in managing project success. One of the most important success keys of the project is to identify the project risks that may arise during the project life cycle. The misalignment between project goals and the organization's strategic goals, changes in management personnel, and lack of technical support are a risk that affects negatively on the project achievements. The study proves that managing risks properly through the project life cycle contributes to mitigating risks and preventing project failure. There needs to consider the impact of the project scope as a critical factor that may affect mainly project success. The weak scope definition contributes to producing a gap between project objectives and organization strategies. However, ignoring the importance of including the scope impact as an effective factor may affect the project success considered as a limitation in this study.

(Battistello et al. 2018) submitted four steps framework that applied to the international company. Product Information Management (PIM) is a new type of software and recently is growing in demand to include all business sizes. The study focused on significant points such as identifying the stakeholders, collect the requirements, understanding the working process, and framing the PIM model. There was little information about the PIM in the literature review, and there was no study focused on the PIM scoping process in depth. Therefore, this study filled that gap by developing a framework to support the PIM. The testing on the proposed framework implemented on a single international company that considers a limitation may negatively affect the accuracy of deliverables and validation.

(Pollack, 2016) discussed two different approaches, project management (PM), and scope change management (SCM) depends on the literature review. The traditional PM focuses on the cost, schedule, and quality, while CM focuses on developing vision, leadership change, ownership, and alignment strategies. Despite the differences between the approaches, the discussion focused on the benefits of involving PM and CM approaches in one integrated model to deliver business objectives effectively. However, isolating PM and CM may cause tension and be less efficient. Therefore, Pollack discussed the storage coherence relation, dependency, and shared aspects

between project management and change management. Hence, it is confirmed that the integration of PM and CM effect positively on the project deliverables to keep them under control. However, there is a need to apply the proposed research to an industrial case study to validate.

2.8 Research gap

The Scope change of a project is the main reason for cost, time overruns, it remained common problem in every construction project in general, and critical mainly projects in Addis Ababa. However, the extents as well as the frequency of occurrence of scope change have remained under-studied. Theses consequences of scope change, delays and cost overruns, have huge implications from economic and political points of view. Delays in project implementation mean that the organization owning the project, the customers of the project and other stakeholders directly or indirectly related to the project suffer longer than is necessary. This in turn limits the growth potential of the economy of the client organization at large (Adamu, 2018).

Hence, future studies are requisite to capture the dynamics of scope changes and systematically assess their impacts to facilitate effective construction project management. Good understanding of causes and effects is always a requirement for successful construction project management (Sun et.al, 2009). Scope change is a cause for schedule overrun, cost overrun and quality compromise of a project. Therefore, whenever scope changes occur, immediate attention is imperative to plan for a sound actions and responses (Love et al., 2002). Thus, if the problem recognized at the earlier phase of the project, the impact it will have on project performance (time and cost) can be effectively inhibited (Hwang & Low, 2012). In view of that, construction project delay and cost overruns can ultimately well mitigated. However, the problem of scope change exhibited at mid-way of the project implementation the likely of time and cost increase is huge.

Scope changes can come from internal or external sources, but if requests for change are, frequent and numerous it can be a clear indicator of a poorly-defined project scope and a poorly defined project baseline (Roberg, 2017).

Various seen and unforeseen factors are also culprits for scope change during the implementation phase of the project. The first factor is a change made by the project manager, when the project gets further and further the manager obtain a better understanding of what needs to be done to accomplish the project and this may lead to a major change in the project plan, which can result in a change to schedule and cost. For a commercial project a change in scope, have to made midstream to respond to a new demand by the customer. A changing project

scope is a major source of schedule and cost overrun. To minimize frequent scope change of a project effort has to make at the very beginning of the project though it is becoming increasingly difficult to do so in the present fast changing world (Roberg, 2017).

The research gaps, which were identified by this study, includes the actual impact of parties involved in the project (client, contractor and consultant), the psychological impact of employees and project were no identified in the previous studies. It also identify the cause of project scope change in the study area.

Scope change according to Elyse, have the power to change project deliverables, the project team, and the budget, so it is essential to have a good process to manage these changes (Elyse, 2009) but Mochal argues that during implementing a project there will be many good reasons why things need to change.

2.9 Conceptual framework

Based on the literature review, a conceptual framework for assessing the causes of predefined scope change and the possible consequences on construction project and identifying the relationships between the identified variables and the consequences has constructed. The identification of factors causing predefined scope change are based on the works of (Mochal, 2006) ten good factors for scope change during the implementation phase of a project, (Saktars, 2010) three types of scope change, Technical change, Market change and Contractual change and according to (Berry, 2015) there are internal and external causes of scope change. The impacts of these scope change factors are quantitatively and ranked according to their importance and their relationship with the consequences qualitatively examined. The first part of this framework considers the factors causing scope change. The second part of the framework examines the relationships with scope change. The factors for scope change evaluated in terms of their severity and frequency of occurrence and their impact on schedule, cost and quality of the project deliverable completion time, completion cost, and quality and customer satisfaction. The conceptual framework described in Figure 2.2 below,

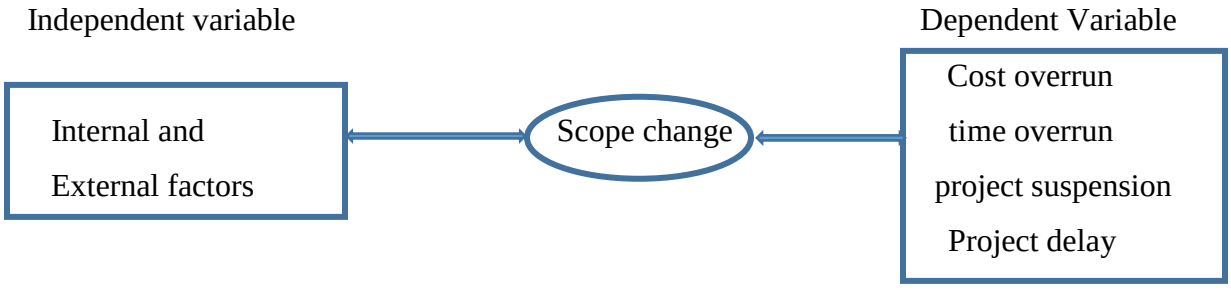

Figure 2.2: Conceptual framework

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Description of the Study Area

This study was conduct at Kality dry port in Addis Ababa and the location map of the study area is shown in the figure 3.1 below.

Easting	Northing
474109.0613	988033.8675

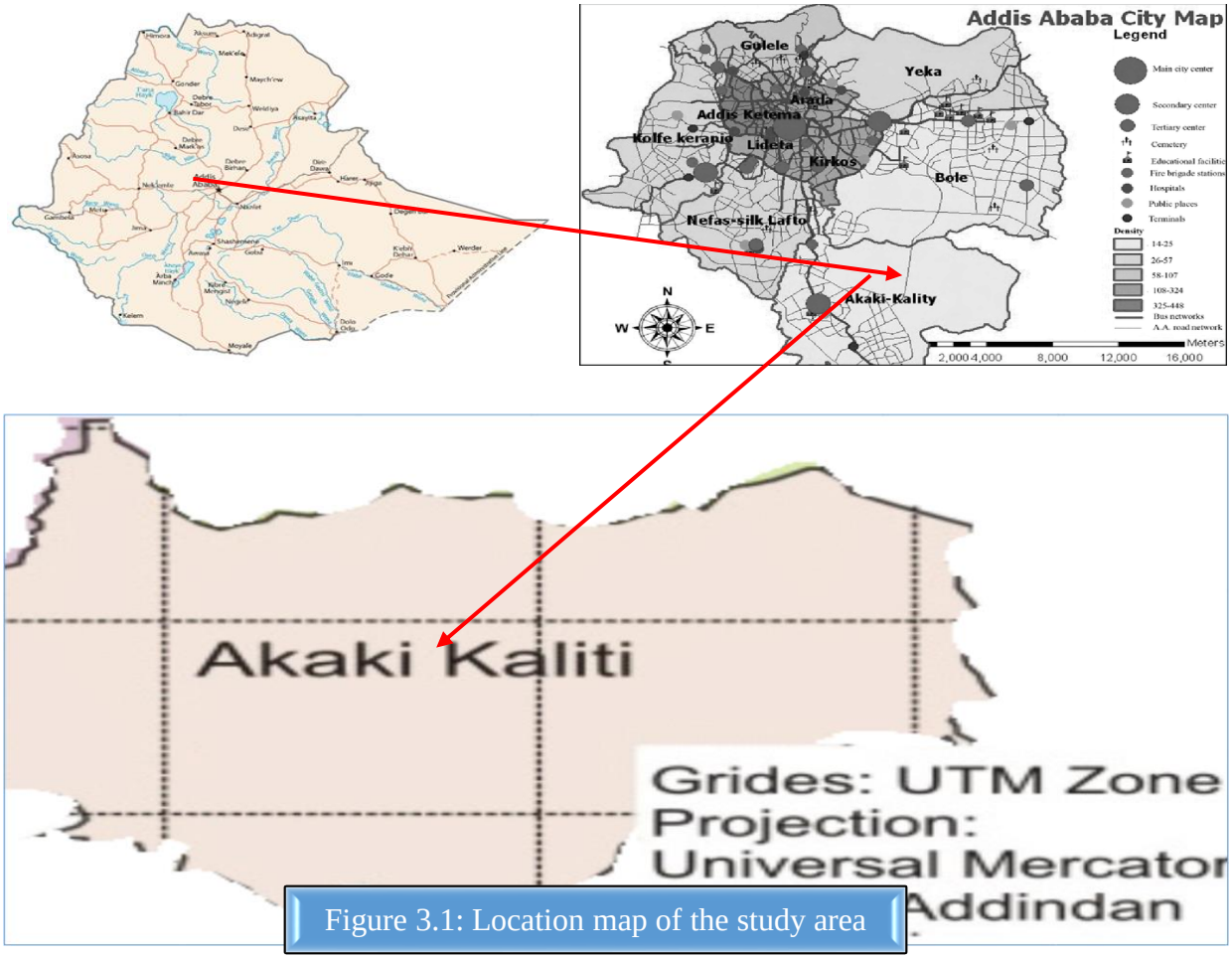

Figure 3.1: Location map of the study area

Source: Survey result, 2024

The site plan of the Kality dry port is shown in figure 3.2 below.

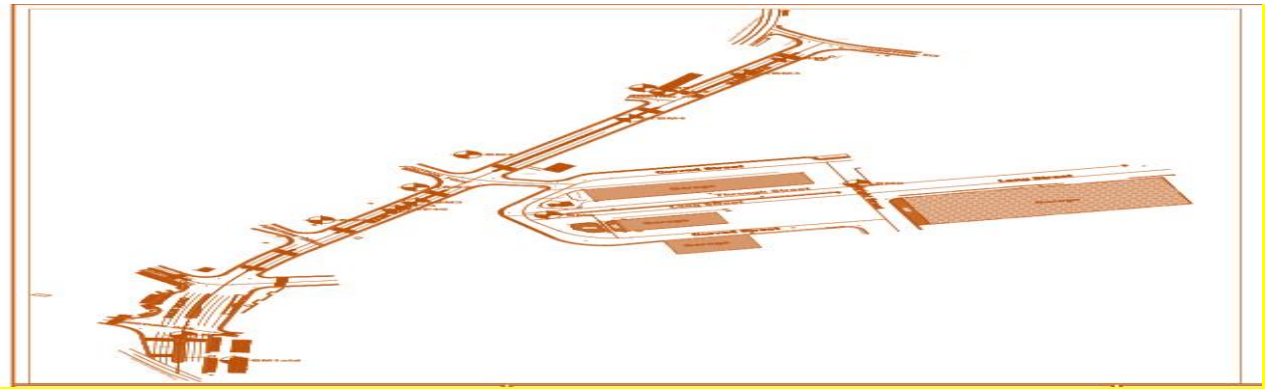

Figure 3.2: Site plan of the study area

3.2 Research Design

A descriptive research was employed to obtain a comprehensive understanding and to describe the overall phenomena of Predefined scope change in Kality dry port and terminal compound project. The researcher attempted to collect data from the relevant source, professionals from ESLS, consultants (ECDSWC, TDSS), and contractors (ALTAR). It also will an applied nature since it design to assess the existing condition of the project.

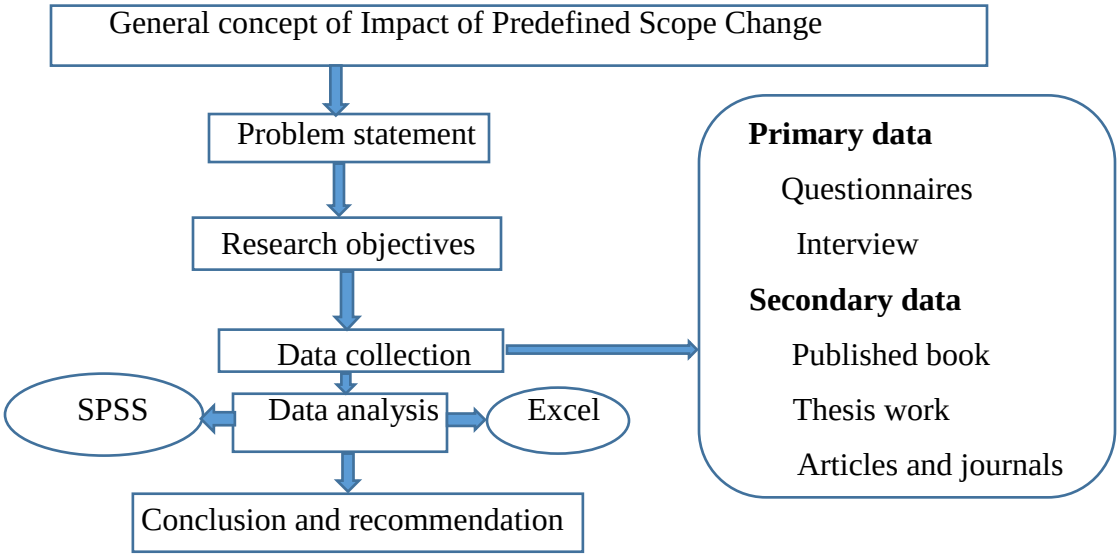

Figure 3.3: Thesis procedure

3.3 Research approach

This study used both quantitative and qualitative (Mixed) approach, the quantitative approach tries to measure the problem by identify facts and quantify the collected data from respondents to establish relationships by using statistical tools and qualitative approach used to qualify ideas, opinions, suggestions, or different authors reflected in different books, journals, and research materials. However, dominantly quantitative nature research approach with some use of qualitative research approach formats used to test the objective by examining the relationship among the factors. These factors, in turn, can measured, typically on instruments, so that numbered data can analyzed using statistical procedures.

3.4 Source of the Data

This study was utilized both primary and secondary data. Primary data was collected by using questionnaires, interview and data sources from literature review of previous similar researches, project works and consultancy contract document, Contractor work methodology and work schedule, Consultant monthly report, Design reports, Journals, Annual reports and Ethiopian Shipping and Logistics Enterprise flayers and web pages as a desk study was use.

3. 5 sample design

3.5.1 Target population

The target population of the study include those who directly involved in Kality dry port and terminal, construction project parties such as employer, consultant and contractor were indicated in the following from table 3.1 to 3.5.

3.5.2 Sample size

Based on the sampling techniques, Kality dry port and terminal construction project was purposively (homogeneous sampling) selected. The questionnaire was designed to analyze the perspective of construction project actors toward the preferred scope change management in Kality dry port and termination construction project. The overall sampling frame of the research contained 35 participants. These different respondent categories; were used to obtain fair answer from different perspective and to support scientific analysis based on their responses selected and sample size selection are tabulated from tables 3.1, 3.2 and 3.3 below;

Table 3.1 Respondents selected from consultant

No	Man Power Input	Total Assigned Staff
1	Head office input	1
2	Resident Engineer	1
3	Highway Engineer	1
4	Material Engineer	2
5	Contract Engineer	2
6	Electrical Engineer	1
7	Hydraulic Engineer	2
8	Quantity Engineer	1
9	Material Inspector	2
10	Work Inspector	2
11	Senior Surveyor	1
12	Surveyor	2
Total Consultant Staff		**18**

Source: Project Consultant, 2024

Table 3.2: Respondents selected from contractor

Item	Man Power Input	Assigned Staff	Total experience (years)
1	Project Manager Full Time	1	BSC in civil engineering with 8/10 Experience
2	Geotechnical Engineer Full Time	1	BSC in civil engineering with 8/10 Experience
3	Material Engineer Full Time	1	BSC in civil engineering with 8/10 Experience
4	Construction Forman Full Time	1	Advance diploma or TVET 10/14 year Experience
5	Quantity Surveyor Full Time	1	Advance diploma or TVET 6/8 year Experience
Total No of Staff		5	

Source: contractor work force, 2024

Table 3.3: Respondents selected from contractors

Item	Man Power Input	Total Assigned Staff
1	Earth Work Forman	1
2	Structural Forman	2
3	Assistance/ Structural Forman	1
Total No of Construction Contractor Crew		4

Source: Contractor work schedule, 2024

Table 3.4: Client work force

Item	Man Power Input	Unit	Total No of Staff
1	Port and Terminal Facility Development Director	No	1
2	Port and facility Manager	No	1
3	Contract Administration Manager	No	1
4	Senior Civil Engineer	No	5
5	Senior Road Engineer	No	4
	Total Client manpower		12

Source: Client work, 2024

Table 3.5: Sample population Summary

Involved parties	**Case study Participant in each parties**
Consultant	18
Contractor	9
Client	12
Sample size	**35**

Source: Project contract document and site survey, 2024

3.5.3 Sample Technique

Purposive sampling and cluster sampling techniques were used to select target respondents acted in Kality dry port and terminal compound construction project (project owner, project consultant and contractor) are identify for the questionnaire as the target population of the study.

3.8 Data Collection Method

The data were collected through questionnaires, interview and desk study as detailed below

3.8.1. Questionnaires

Questionnaires were prepared and distributed to respondent. The main point contained in the questionnaires includes the cause of scope change, the effect of scope change and the potential strategies to mitigate the scope change. The detailed questionnaires are presented in annex 1.

3.8.2 Interview

The second type of primary data was discussions made with the high position of organization representatives (Project manager, Resident Engineers of the project and project counterpart) at Kality dry port and Terminal construction project. The interview is important data gathering technique involving verbal communication between the researcher and the interviewee. This was aiming at knowing the attitudes and reflections of the respondents on the predefined scope change impact and the way forward of its management in Kality dry port and terminal construction project. In addition, it also used to cover the question did not answered in the self-administered questionnaire. Narrative analysis method was used to cluster the interview data into their similarity and summarize the firsthand information have taken from the participants for the aim of analysis and interpretation. The detailed interview guide are presented in annex 2.

3.9. Method of data analysis

The collected data were analyzed using SPSS and Microsoft Excel. Moreover, frequency, percentage, mean and Relative Importance Index (RII) were employed to rank, summarize and draw conclusions about the sample data. For ease of analysis, the response distribution on the 5 point Likert scale of ["very high =5, high=4, medium=3, low =2, very low=1"] were used (Tebeje and Teka, 2015). Hence, the statistical tool frequency distribution has employed to see the response distributions on the 5-point Likert scale, table and charts used to display the distribution of data together with simple analysis.

The Relative Importance Index (RII) computed (Cheung et al, 2004); (Iyer and Jha, 2005); (Ugwu and Haupt, 2007) using the following formula;

$$\mathbf{RII} = \sum_{\mathbf{A*N}} \mathbf{W} \; (\mathbf{0} \leq \mathbf{RII} \leq \mathbf{1}) \; \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (\mathbf{1})$$

Where,

W= is the weight given to each factor by the respondents and ranges from (1 to 5), (where 1 is very low and 5 is very high)

A= is the highest weight (i.e. 5 in this case) and

N= is the total number of respondents

The Relative Importance Index (RII) used to determine the relative importance of quality factors involved and calculated for each item and ranked accordingly. The points of Likert scale used is equal to the value of (W), weighting given to each factor by the respondents. On other hand, standard deviation (SD) also used to rank the items, which has similar rank when ranked with relative importance index (RII). Standard deviation is a measure of the amount of variation or dispersion of a set of value. The low standard deviation indicates that the values tend to be close to the mean of the set, while a high standard deviation indicates that the values spread out over a wide range. The findings from the analysis presented using tables, graphs and interpreted to reach valid conclusions. The principal purpose is to rank the identified factors and find out the major factors that are required to be given due attention to preferred scope change management implement in Kality dry port and termination construction project.

3.10 Validity test

Validity achieved through having objective questions included in the questionnaire. It is the extent, at which a test measures what it entitlements to measure (Lakshmi, 2013). A measure is valid if it will measures what it will supposed to measure. Content validity is the extent to which the items in an instrument cover the entire range of the significant aspects of the area being investigated (Kindy, 2016). It is the degree at which the measurement device, will measuring the questions in the questionnaire, to provide sufficient coverage of the research investigative questions.

To maintain the internal validity the researcher has developed well-structured questionnaires, and have collected valid data from the respondents. A pretest or pilot survey for each question done on four experts' in order to check the validity and reliability of the instruments. Based on the result

obtained the questionnaires have been modified before finally issued to respondents considering comments given by advisor.

3.11 Data Reliability Tests

Reliability is the extent to which measurements are repeatable when different persons perform the measurements on different occasions under different conditions with supposed alternative instruments, which measure the same thing (Dorset, 2011). Reliability is consistency of the measurement or stability of measurement over a variety of conditions in which the same results should obtained.

The most popular method to test for internal consistency in the behavioral sciences is Cronbach's alpha coefficient. As the general rule of thumb is that a Cronbach's alpha reliability coefficient normally ranges between 0.70< suggest that the items have relatively high internal consistency and acceptable. In order to test the internal consistency of variables in the research instrument Cronbach's alpha coefficient will calculated for the items by using the following formula;

$$\boldsymbol{\alpha} = \frac{\mathbf{N} * \bar{\mathbf{C}}}{\mathbf{V} + (\mathbf{N} - \mathbf{1})\bar{\mathbf{C}}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.. (\mathbf{2})$$

(Where, N is equal to the number of items, Շ-bar is the average inter-item covariance among the items and v-bar equals the average variance.)

Table 3.6: internal consistency reliability analysis

Reliability Statistics	
Cronbach's Alpha	N of Items
0.910	31

Source: Survey result, 2024

The above table: 6 shows that Cronbach's Alpha is equal to 0.910>0.7 so, it can be concluded that the items have relatively high internal consistency and acceptable.

3.12 Ethical consideration

The concerned body who was participated in the study informed about the study and in addition, the respondents asked for their consent prior to the tools to gather the relevant data. Every person involve in the study is entitled to the right of privacy and dignity of treatment, and no personal harm is cause to subject in the study. Information obtain is held in strict confidential and no part

of their response is exposed to anyone without their complete consent. All assistance, collaboration of others and sources from which information drawn were acknowledged.

CHAPTER FOUR: RESULT AND DISCUSSION

4.1 Socioeconomic description

4.1.1Response rate

The response rate off the respondents represented in table 4.1.1 below

Table 4.1.1: Response rate

Expert from	Distributed questionnaires	Responded questionnaire	Response rate
Consultant Staff	18	16	89%
Contractor	9	6	67%
Client	12	9	75%
Total	35	31	78%

Source: survey result, 2024

As it indicate in above table 4.1.1, from the total 35 questionnaires distributed to respondents from consultant, contractor and client, 31 of them are filled correctly and returned to the researcher for the purpose of the analysis. According to this, 78% of the questionnaires were used for the analysis and it show that it believed enough for this research.

4.1.2 Personal Background

The socioeconomic description of the respondents is presented from figure 4.1.1 to table 4.1.4 below.

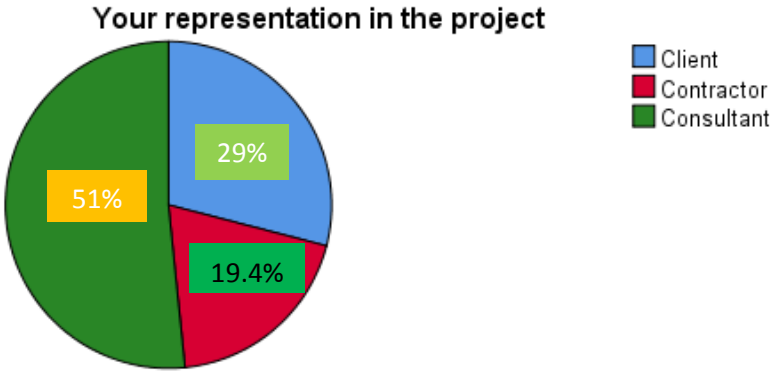

Figure 4.1.1: Distribution of stakeholders in the project.

Source: survey result, 2024

Figure 4.1.1: above, shows that 16(51.6%) of respondents were consultants, 9(29%) were clients and 19.4% were contractors. This shows the participation of contractors needs much emphasis on future studies.

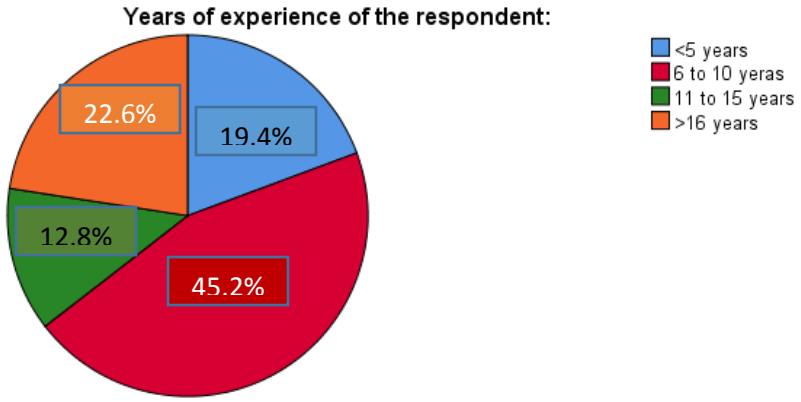

Figure 4.1.2: Work experience of the respondent.

Source: survey result, 2024

Figure 4.1.2 above result shows out of the total respondents, 14 (45.2%) of respondents' work experience were 6 to 10years, 7 (22.6%) of respondents' work experience was greater than 16 years and 6(19.4%) of the respondents work experience was less than 5 years. The result indicated that the majority of respondents" work experience in construction was above 10years. This implies the majority of our participants for the survey experienced and this implies most of the consultants, clients and contractors were highly experienced.

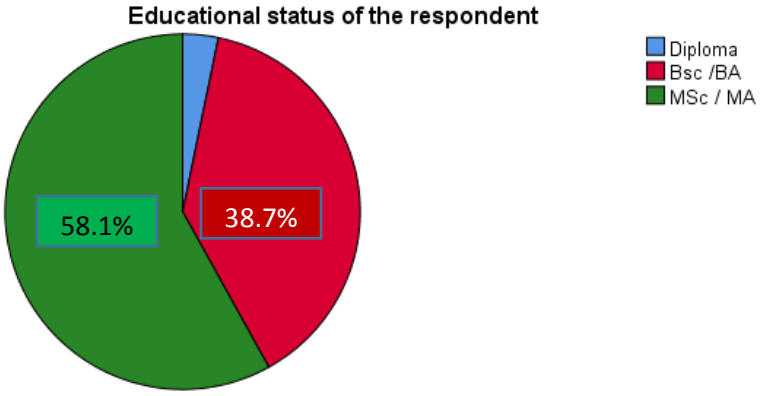

Figure 4.1.3: Educational status of the responden

Source: survey 2024

Figure 4.1.3 above shows that 18 (58.1%) of respondents were MSc/MA degree holders, 12 (38.70%) of respondents were first-degree holders and 1 (3.2%) of the respondent was diploma

holders. The result shows that most of the respondent were Master's degree holders and at all somehow encouraging

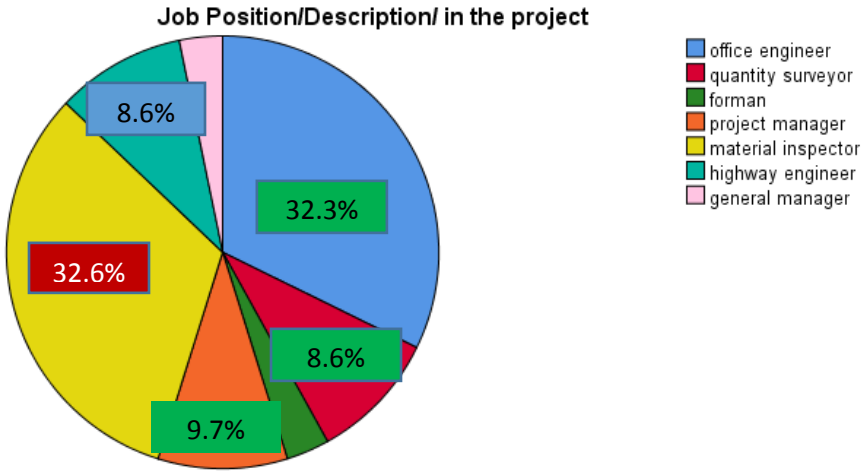

Figure 4.1.4: Job position of the respondents in the project

Source: Survey Result, 2024

Figure 4.1.4 above shows that 10 (32.3%) of respondents were in the position of office engineer and material inspector respectively, 9 (32.6%) of respondents were in the position of project manager and highway engineer position respectively. The result shows that most of the respondent were professional and in high position holders and at all somehow encouraging.

4.2: The causes of project Scope change

This research discussed the assessment on the impact of scope change in the case of Kality dry port and terminal constriction project. Descriptive statistics of the extent of contractor, client and consultant were analyzed by using SPSS and Microsoft Excel: the frequency result of the survey for each item is presented in tabular form in table 4.2 below.

Table 4.2.1: Incompleteness of contract document

Incompleteness of contract document					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	6.5	6.5	6.5
	Disagree	2	6.5	6.5	12.9
	Agree	17	54.8	54.8	67.7
	strongly agree	10	32.3	32.3	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As showed on the above table4.2.1 above, out of the 31 respondents, 17 (54.8%) rated agree, and 10 (32.3%) rated strongly agree with the degree of Incompleteness of contract document and the cause of scope change is highly attributed to incompleteness of contract document.

Table 4.2.2: Absences of the required material

Scarce/ Absences of the required material, equipment, budget and skilled work force.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	6.5	6.5	6.5
	Disagree	2	6.5	6.5	12.9
	Neutral	3	9.7	9.7	22.6
	Agree	18	58.1	58.1	80.6
	strongly agree	6	19.4	19.4	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It indicated in the above table 4.2.2 above, out of the 31 respondents, 18 (58.1%) rated agree, and 6 (19.4%) rated strongly agree with the degree of Scarce/ Absences of the required material, equipment, budget and skilled man power.

Table 4.2.3: Inadequate working drawing details

Inadequate working drawing details					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	3	9.7	9.7	9.7
	Disagree	5	16.1	16.1	25.8
	Neutral	6	19.4	19.4	45.2
	Agree	12	38.7	38.7	83.9
	strongly agree	5	16.1	16.1	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As indicated in the above table 4.2.3 above, out of the 31 respondents, 12 (38.7%) rated agree, and 6 (19.4%) rated neutral with the degree of Inadequate working drawing details.

Table 4.2.4: Change in design and specification by consultant

Design complexity, Change in design and specification by the consultant.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	6.5	6.5	6.5
	Disagree	2	6.5	6.5	12.9
	Neutral	14	45.2	45.2	58.1
	Agree	10	32.3	32.3	90.3
	strongly agree	3	9.7	9.7	100.0
	Total	31	100.0	100.0	

Source: survey, 2024

It indicated in the above table 4.2.4, out of the 31 respondents, 14 (45.2%) rated neutral, and 10 (32.3%) rated agree with the extent of Design complexity, Change in design and specification by the consultant.

Table 4.2.5: Lack of additional fund to the project

Lack of additional fund to the project.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	8	25.8	25.8	25.8
	Neutral	5	16.1	16.1	41.9
	Agree	12	38.7	38.7	80.6
	strongly agree	6	19.4	19.4	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As indicated on the table above 4.6, out of the 31 respondents, 12 (38.7%) rated agree, and 6 (19.4%) rated strongly agree with the degree of lack of additional fund to the project.

Table 4.2.6: Scarcity of allocation budget to complete the project scope

Scarcity of allocated budget to complete the project scope					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	4	12.9	12.9	12.9
	Neutral	7	22.6	22.6	35.5
	Agree	12	38.7	38.7	74.2
	strongly agree	8	25.8	25.8	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It indicated in the above table 4.2.6, out of the 31 respondents, 12 (38.7%) rated agree, and 8 (25.8%) rated strongly agree with the Scarcity of allocated budget to complete the project scope.

Table 4.2.7: Need of better quality

Need of better quality					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	9	29.0	29.0	29.0
	Neutral	5	16.1	16.1	45.2
	Agree	13	41.9	41.9	87.1
	strongly agree	4	12.9	12.9	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it indicated in the above table 4.2.7, out of the 31 respondents, 13 (41.9%) rated agree, and 9 (29%) rated disagree with the extent of need of better quality.

Table 4.2.8: Luck of experience in planning

Luck of experience in planning and defining project scope					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	6.5	6.5	6.5
	Neutral	3	9.7	9.7	16.1
	Agree	14	45.2	45.2	61.3
	strongly agree	12	38.7	38.7	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It indicated in the above table 4.2.8, out of the 31 respondents, 14 (45.2%) rated agree, and 12 (38.7%) rated strongly agree with extent of Luck of experience in planning and defining project scope.

Table 4.2.9: Weak professional consultancy service

Weak professional consultancy service					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	7	22.6	22.6	22.6
	Neutral	8	25.8	25.8	48.4
	Agree	14	45.2	45.2	93.5
	strongly agree	2	6.5	6.5	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As showed in the above table 4.2.9, out of the 31 respondents, 14 (45.2%) rated agree, and 8(25.8%) rated neutral with degree of Weak professional consultancy service.

Table 4.2.10: Employer spontaneous interference

Employer spontaneous interference and frequent change order.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	1	3.2	3.2	3.2
	Disagree	2	6.5	6.5	9.7
	Neutral	6	19.4	19.4	29.0
	Agree	16	51.6	51.6	80.6
	strongly agree	6	19.4	19.4	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It showed in the above table 4.2.10, out of the 31 respondents, 16 (51.6%) rated agree,6(19.4%) rated neutral and 6 (19.4%) strongly agree with the degree of Employer spontaneous interference and frequent change order.

Table 4.2.11: Contractor poor work methodology

Contractor poor work methodology and scheduling					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	6	19.4	19.4	19.4
	Neutral	6	19.4	19.4	38.7
	Agree	11	35.5	35.5	74.2
	strongly agree	8	25.8	25.8	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As showed in the above table 4.2.11, out of the 31 respondents, 11 (35.5%) rated agree, 8(25.8%) and strongly agree with the degree of Contractor poor work methodology and scheduling.

Table 4.2.12: Poor communication between stakeholders

Lack or/and poor communication between the stakeholders					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	6.5	6.5	6.5
	Disagree	8	25.8	25.8	32.3
	Neutral	7	22.6	22.6	54.8
	Agree	7	22.6	22.6	77.4
	strongly agree	7	22.6	22.6	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It indicate I the above table 4.2.13, out of the 31 respondents, 8(25.5%) rated disagree,7 (22.6%) neutral, 7 (22.6%) rated agree and 7 (22.6%) rated strongly agree with the degree of Lack or/and poor communication between the stakeholders

Table 4.2.13: Least bid winner provision

Least bid winner provision					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	3	9.7	9.7	9.7
	Neutral	6	19.4	19.4	29.0
	Agree	9	29.0	29.0	58.1
	strongly agree	13	41.9	41.9	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As showed in the above table 4.2.13, out of the 31 respondents, 13 (41.9%) rated strongly agree, and 9 (29%) agree, with the degree of least bid winner provision.

Table 4.2.14: High current market inflation

High current market inflation					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	6.5	6.5	6.5
	Agree	9	29.0	29.0	35.5
	strongly agree	20	64.5	64.5	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It indicated in the above table 4.2.14, out of the 31 respondents, 20 (64.5%) rated strongly agree, and 9 (29%) agree, with the degree of High current market inflation.

Table 4.2.15: high foreign exchange rate

High foreign exchange rate					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	6.5	6.5	6.5
	Agree	9	29.0	29.0	35.5
	strongly agree	20	64.5	64.5	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As showed in the above table 4.2.15, Out of the 31 respondents, 20 (64.5%) rated strongly agree, and 9 (29%) agree, with the degree of High foreign exchange rate.

Table 4.2.16: Provision of 30% variation work order

PPA Provision of 30% variation works order right					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	5	16.1	16.1	16.1
	Neutral	11	35.5	35.5	51.6
	Agree	11	35.5	35.5	87.1
	strongly agree	4	12.9	12.9	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicated in the above table 4.2.16, Out of the 31 respondents, 11 (35.5%) rated neutral, and 11 (35.5%) agree, with the degree of PPA Provision of 30% variation works order right.

After analyzing the frequency of each item Relative importance index, (RII) analysis were conducted. The higher value of RII shows the most weighted significant factor that contribute to the root causes of project predefine Scope change and the lower RII value indicates the low effects factor.

Ranking of the factor that contribute to the root causes of project predefine Scope change using RII are presented in table 4.2.17 below.

Table 4.2.17: Project predefined scope change using RII

Items	RII	Rank
High foreign exchange rate	0.90	1
Need of better quality.	0.90	1
Luck of experience in planning and defining project scope	0.83	3
Least bid winner provision	0.81	4
Incompleteness of contract document	0.8	5
Absences of the required material, equipment, budget and skilled work force.	0.75	6
Employer spontaneous interference and frequent change order.	0.75	6
Contractor poor work methodology and scheduling.	0.73	7
Inadequate working drawing details	0.72	8
Lack of additional fund to the project.	0.70	9
PPA Provision of 30% variation works order right	0.69	10
High current market inflation	0.68	11
Weak professional consultancy service	0.67	11
Lack or/and poor communication between the stakeholders.	0.66	13
Design complexity, Change in design and specification by the consultant.	0.66	13

Source: survey, 2024

As it indicated in the above table 4.2.17, the most important factors that contribute to the causes of project predefine Scope change agreed by respondents as the main factors ranking from 1-3 are High current market inflation, High foreign exchange rate and Luck of experience in planning and defining project scope.

According to the desk study, need for better quality as it has the first rank among all factors with RII = 0.90 and Study exclusively verified that need of better quality is an outstanding major causes of predefine scope change and Luck of experience in planning and defining project scope are factors, RII= 0.83. These are the most dominant factors that contribute to the root causes of project predefine Scope change in the Kality dry port construction projects.

4. 3: The impacts of scope change in Kality dry port and terminal project

This research discussed the assessment on the impact of predefined scope change in the case of Kality port and terminal constriction project. Descriptive statistics of the extent of contractor, client and consultant were analyzed by using SPSS and Microsoft Excel: the frequency result of the survey for each item is presented in tabular form as follows.

Table 4.3.1: Delay in completion and increase project cost

Delay in completion and Increase project cost decrease project scopes					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	1	3.2	3.2	3.2
	Minor significance	3	9.7	9.7	12.9
	Average significance	7	22.6	22.6	35.5
	High significance	9	29.0	29.0	64.5
	Extreme Significant	11	35.5	35.5	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it showed in the above table 4.3.1, Delay in completion and Increase project cost decrease project scopes rated by a total of 31 respondents, 11 (35.5%) rated as a extreme significance factor, 9 (29%) rated as a High significance factor and 7 (22.6%) rated as Average significance factor.

Table 4.3.2: Causes non-value adding activities such as demolition...

Causes non-value adding activities such as demolition, slower productivity, affects quality etc.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	3	9.7	9.7	9.7
	Minor significance	5	16.1	16.1	25.8
	Average significance	7	22.6	22.6	48.4
	High significance	7	22.6	22.6	71.0
	Extreme Significant	9	29.0	29.0	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicated in the above table 4.3.2, Causes non value adding activities such as demolition, slower productivity, affects quality by a total of 31 respondents, 9 (29%) rated as an extreme Significant factor, 7 (22.6%) rated as a High significance factor.

Table 4.3.3: Causes disputes between involved stakeholders

Causes disputes between involved stakeholders					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor significance	1	3.2	3.2	3.2
	Average significance	9	29.0	29.0	32.3
	High significance	14	45.2	45.2	77.4
	Extreme Significant	7	22.6	22.6	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As showed in the above table 4.3.3, Causes disputes between involved stakeholders rated by a total of 31 respondents, 14 (45.2%) rated as a High significance factor, 9(29%) rated as an Average significance factor and 7 (22.6%) rated as Extreme Significant factor.

Table 4.3.4: Open chance to apply updated technology

Open chance to apply updated technology, so that the project cost and time will save					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	8	25.8	25.8	25.8
	Minor significance	12	38.7	38.7	64.5
	Average significance	4	12.9	12.9	77.4
	High significance	5	16.1	16.1	93.5
	Extreme Significant	2	6.5	6.5	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It indicated in above table 4.3.4, Open chance to apply updated technology, so that the project cost and time will save rated by a total of 31 respondents, 12 (38.7%) rated as a Minor significance factor, 8(25.8%) rated as a fact No significance and 5 (16.1%) rated as High significance factor.

Table 4.3.5: Create favorable condition for stakeholders to generate additional income

Create favorable condition for stakeholders to generate additional income					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	12	38.7	38.7	38.7
	Minor significance	6	19.4	19.4	58.1
	Average significance	6	19.4	19.4	77.4
	High significance	5	16.1	16.1	93.5
	Extreme Significant	2	6.5	6.5	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It indicate in the above table 4.3.5, Create favorable condition for stakeholders to generate additional income rated by a total of 31 respondents, 12(38.7%) rated as a No significance factor, 6(19.4%) rated as a Minor significance factor and 6 (19.4%) rated as Average significance factor.

Table 4.3.6: Slower activity progress

Slower activity progress					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor significance	6	19.4	19.4	19.4
	Average significance	5	16.1	16.1	35.5
	High significance	14	45.2	45.2	80.6
	Extreme Significant	6	19.4	19.4	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As showed in the above table 4.3.6, Slower activity progress rated by a total of 31 respondents, 14 (45.2%) rated as a High significance factor, 6 (19.4%) rated as an Extreme Significant factor and 6 (19.4%) rated as Extreme Significant factor.

Table 4.3.7: Disrupt the surrounding environment

Disrupt the surrounding environment					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor significance	7	22.6	22.6	22.6
	Average significance	12	38.7	38.7	61.3
	High significance	8	25.8	25.8	87.1
	Extreme Significant	4	12.9	12.9	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicated in the above table 4.3.7, Disrupt the surrounding environment rated by a total of 31 respondents, 12 (38.7%) rated as an Average significance factor, 8 (25.8%) rated as a High significance factor and 7 (22.6%) rated as Minor significance factor.

Table 4.3.8: Causes contract termination

Causes contract termination					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	1	3.2	3.2	3.2
	Minor significance	5	16.1	16.1	19.4
	Average significance	5	16.1	16.1	35.5
	High significance	13	41.9	41.9	77.4
	Extreme Significant	7	22.6	22.6	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it showed in the above table 4.3.8, Causes contract termination rated by a total of 31 respondents, 13 (41.9%) rated as a High significance factor, 7(22.6%) rated as an Extreme Significant factor and 5 (16.1%) rated as Average significance factor.

Table 4.3.9: Causes company bankruptcy and shutdown

Causes Company bankruptcy and shutdown					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor significance	4	12.9	12.9	12.9
	Average significance	10	32.3	32.3	45.2
	High significance	10	32.3	32.3	77.4
	Extreme Significant	7	22.6	22.6	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It indicated in the above table 4.3.9, Causes Company bankruptcy and shutdown rated by a total of 31 respondents, 10 (32.3%) rated as an Average significance factor, 10(32.3%) rated as a High significance factor and 7 (22.6%) rated as an Extreme Significant factor.

After analyzing the frequency of each item Relative importance index, (RII) analysis was conducted. The higher value of RII shows the most weighted significant Impact of Scope Change on the performance of the Kality dry port and terminal project and the lower RII value indicates the low effects factor.

Ranking of the impacts of scope change in the performance of Kality dry port and terminal project using RII are presented in table 4.3.10

Table 4.3.10: Ranking the Impact of scope change in the performance of Kality dry port

Items	RII	Rank
High current market inflation	0.79	1
decrease project scopes	0.73	2
Delay in completion and increase project cost	0.77	2
Causes contract termination	0.73	3
Causes Company bankruptcy and shutdown	0.73	3
Slower activity progress	0.73	3
Causes disputes between involved stakeholders,	0.72	4
Disrupt the surrounding environment	0.66	5
Causes non value adding activities; demolition, slower productivity, affects quality	0.69	5
Open chance to apply updated technology, so that the project cost and time will save	0.48	6
Create favorable condition for stakeholders to generate additional income	0.46	7

Source: survey result, 2024

As showed in the above table 4.3.10, The most important impacts of scope change in the performance of Kality dry port and terminal project that agreed by respondents ranking from 1-3 are, High current market inflation, delay in completion and increase project cost and decrease project scopes.

According to all responses, High current market inflation has the first rank among all factors with RII = 0.79, Delay in completion and increase project cost, with RII= 0.77 decrease project scopes with RII, = 0.73**.** These are the most dominant impacts of scope change in the performance of Kality dry port and terminal construction projects.

4.4 Effect of scope change on project parties

4.4.1: Effect of scope change on project Client.

This research discussed the assessment on the impact of predefined scope change in the case of Kality port and terminal constriction project. Descriptive statistics of the extent of contractor, client and consultant were analyzed by using SPSS and Microsoft Excel: the frequency result of the survey for each item is presented in tabular form as follows.

Table 4.4.1: Requested an addition finance

Requested an additional Finance/budget					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	1	3.2	3.2	3.2
	Minor significance	2	6.5	6.5	9.7
	Average significance	2	6.5	6.5	16.1
	High significance	16	51.6	51.6	67.7
	Extreme Significant	10	32.3	32.3	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It indicated in the above table 4.4.1, Requested an additional Finance/budget rated by a total of 31 respondents, 16 (51.6%) rated as a facto High significance factor, 10(32.3%) rated as an Extreme Significant factor and 2 (6.5%) rated as an Average significance factor.

Table 4.4.2: Forced to extend project completion date

Forced to extend project completion date					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor significance	1	3.2	3.2	3.2
	Average significance	3	9.7	9.7	12.9
	High significance	12	38.7	38.7	51.6
	Extreme Significant	15	48.4	48.4	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As showed in the above table 4.4.2, Forced to extend project completion date rated by a total of 31 respondents, 15 (48.4%) rated as an Extreme Significant factor, 12(38%) rated as a High significance factor and 3 (9.7%) rated as Average significance factor.

Table 4.4.3: Create opportunity to incompletion the missed scope

Create opportunity to incorporating the missed scope					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	3	9.7	9.7	9.7
	Minor significance	2	6.5	6.5	16.1
	Average significance	9	29.0	29.0	45.2
	High significance	15	48.4	48.4	93.5
	Extreme Significant	2	6.5	6.5	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it indicated in the above table 4.4.3, Create opportunity to incorporating the missed scope rated by a total of 31 respondents, 15 (48.4%) rated as a High significance factor, 9(29%) rated as a high Average significance factor and 3 (9.7%) rated as No significance factor.

Table 4.4.4: Forced to omit, reduce and cancel some predefined scope partially or fully

Forced to omit, reduce, or/and cancel some predefined scope partially or fully					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	3	9.7	9.7	9.7
	Minor significance	1	3.2	3.2	12.9
	Average significance	2	6.5	6.5	19.4
	High significance	15	48.4	48.4	67.7
	Extreme Significant	10	32.3	32.3	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicated in the above table 4.4.4, Forced to omit, reduce, or/and cancel some predefined scope partially or fully rated by a total of 31 respondents, 15 (48.4%) rated as a High significance factor, 10 (32.3%) rated as an Extreme Significant factor.

Table 4.4.5: Increase end user satisfaction

Increase end user satisfaction					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	3	9.7	9.7	9.7
	Minor significance	7	22.6	22.6	32.3
	Average significance	9	29.0	29.0	61.3
	High significance	9	29.0	29.0	90.3
	Extreme Significant	3	9.7	9.7	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As showed in the above table 4.4.5, Increase end user satisfaction rated by a total of 31 respondents, 9 (29%) rated as an Average significance factor, 9(29%) rated as a High significance factor and 3 (9.7%) rated as Extreme Significant factor.

Table 4.4.6: Workload increased but work quality decreased

Work load increased but work quality decreased					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	9	29.0	29.0	29.0
	Minor significance	4	12.9	12.9	41.9
	Average significance	5	16.1	16.1	58.1
	High significance	7	22.6	22.6	80.6
	Extreme Significant	6	19.4	19.4	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicated in the above table 4.4.6, Workload increased but work quality decreased rated by a total of 31 respondents, 9 (29%) rated as a No significance factor, 7(22.6%) rated as a High significance factor and 6 (19.4%) rated as an Extreme Significant factor.

Table 4.4.7: Exposed for high exchange rate and higher market price inflation

Exposed for high exchange rate and higher market price inflation					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor significance	1	3.2	3.2	3.2
	High significance	9	29.0	29.0	32.3
	Extreme Significant	21	67.7	67.7	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was showed in the above table 4.4.7, Exposed for high exchange rate and higher market price inflation rated by a total of 31 respondents, 21 (67.7%) rated as an Extreme Significant factor, 9(29%) rated as a High significance factor and 1 (3.2%) rated as Minor significance factor.

Table 4.4.8: Create favorable situation for fraud and corruption

Create favorable situation for fraud and corruption					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor significance	4	12.9	12.9	12.9
	Average significance	7	22.6	22.6	35.5
	High significance	11	35.5	35.5	71.0
	Extreme Significant	9	29.0	29.0	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicate in the above table 4.4.8, Create favorable situation for fraud and corruption rated by a total of 31 respondents, 11 (35.5%) rated as an Average significance factor, 9(29%) rated as an Extreme Significant factor and 7 (22.6%) rated as Average significance factor.

Table 4.4.9: Create good work environment and relationship between stakeholders

Create good work environment and relationships between stakeholders					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	4	12.9	12.9	12.9
	Minor significance	10	32.3	32.3	45.2
	Average significance	14	45.2	45.2	90.3
	High significance	1	3.2	3.2	93.5
	Extreme Significant	2	6.5	6.5	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicated in the above table 4.4.9, Create good work environment and relationships between stakeholders rated by a total of 31 respondents, 14 (45.2%) rated as an Average significance factor, 10 (32.3%) rated as a Minor significance factor and 4 (12.9%) rated as No significance factor.

Table 4.4.10: Improve project management, give chance to develop new strategy to complete the project

Improve the project management system and give chance to develop new strategy to complete the project with in the specified cost and time					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	5	16.1	16.1	16.1
	Average significance	9	29.0	29.0	45.2
	High significance	14	45.2	45.2	90.3
	Extreme Significant	3	9.7	9.7	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it showed in the above table 4.4.10, improve the project management system and give chance, to develop new strategy to complete the project with in the specified cost and time rated by a total of 31 respondents. According to these, 14 (45.2%) rated as a High significance factor, 9(29%) rated as an Average significance factor and 5 (16.1%) rated as No significance factor.

Table 4.4.11: Become a means for loss of the job

Become a means for loss of the job.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	6	19.4	19.4	19.4
	Minor significance	1	3.2	3.2	22.6
	Average significance	8	25.8	25.8	48.4
	High significance	11	35.5	35.5	83.9
	Extreme Significant	5	16.1	16.1	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicated in the above table 4.4.11, Become a means for loss of the job rated by a total of 31 respondents, 11 (35.5%) rated as a High significance factor, 8(25.8%) rated as a f Average significance factor and 6 (%) rated as f No significance factor.

Table 4.4.12: Create psychological, finance and social problem on the project employee

Create psychological, financial and social problem on the project employee.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor significance	5	16.1	16.1	16.1
	Average significance	6	19.4	19.4	35.5
	High significance	15	48.4	48.4	83.9
	Extreme Significant	5	16.1	16.1	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it showed in the above table 4.4.12, Create psychological, financial and social problem on the project employee rated by a total of 31 respondents, 15 (48.4%) rated as a High significance factor, 6 (19.4%) rated as an average significance factor and 5 (16.1%) rated as Extreme Significant factor.

Table 4.4.13: Quality inspection work affected

Quality inspection work affected.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor significance	6	19.4	19.4	19.4
	Average significance	3	9.7	9.7	29.0
	High significance	16	51.6	51.6	80.6
	Extreme Significant	6	19.4	19.4	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicated in the above table 4.4.13, Quality inspection work affected rated by a total of 31 respondents, 16 (51.6%) rated as a High significance factor, 6 (19.4%) rated as a Minor significance factor and 6 (19.4%) rated as Extreme Significant factor.

Table 4.4.14: Uselessness and dizziness feeling create over the employee

Uselessness and dizziness feeling created over the employee due to suspension of the project activity					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor significance	8	25.8	25.8	25.8
	Average significance	2	6.5	6.5	32.3
	High significance	12	38.7	38.7	71.0
	Extreme Significant	9	29.0	29.0	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it showed in the above table 4.4.14, Uselessness and dizziness feeling created over the employee due to suspension of the project activity rated by a total of 31 respondents, 12 (38.7%) rated as a f High significance factor, 9 (29%) rated as an Extreme Significant factor and 8 (25.8%) rated as Minor significance factor.

Table 4.4.15: Establish a baseline scope early in order to identify and recognize changes

Establish a baseline scope early in order to identify and recognize changes					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	2	6.5	6.5	6.5
	Agree	22	71.0	71.0	77.4
	strongly agree	7	22.6	22.6	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it indicated in the above table 4.4.15, Establish a baseline scope early in order to identify and recognize changes rated by a total of 31 respondents, 22 (71%) rated as a high factor, 12 (30%) rated as a very high factor and 4 (10%) rated as medium factor.

Table 4.4.16: Create dissatisfaction due to decrease of preplanned scope of works

Create dissatisfaction due to decrease of preplanned scope of works					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor significance	2	6.5	6.5	6.5
	Average significance	7	22.6	22.6	29.0
	High significance	8	25.8	25.8	54.8
	Extreme Significant	14	45.2	45.2	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As showed in the above table 4.4.16, Create dissatisfaction due to decrease of preplanned scope of works rated by a total of 31 respondents, 14 (45.2%) rated as an Extreme Significant factor, 8 (25.8%) rated as a High significance factor and 7 (22.6%) rated as f High significance factor.

After analyzing the frequency of each item Relative importance index, (RII) analysis was conducted. The higher value of RII shows the most weighted significant effect of scope change on project stakeholders Such as Client and the lower RII value indicates the low effects factor.

Table 4.4.17: The effect of scope change on project client

Items	RII	Rank
Forced to omit, reduce, or/and cancel some predefined scope partially or fully.	0.92	1
Exposed for high exchange rate and higher market price inflation	0.86	2
Forced to extend project completion date	0.86	2
Requested an additional Finance/budget/	0.81	4
Create favorable situation for fraud and corruption	0.76	5
Create dissatisfaction due to decrease of preplanned scope of works.	0.74	6
Create satisfaction due to upgraded work quality and newly incorporated scopes of works.	0.74	6
Create psychological, financial and social problem on the project employee.	0.73	7
Create opportunity to incorporating the missed scope.	0.67	8
Improve the project management system and give chance to develop new strategy to complete the project with in the specified cost and time.	0.66	9
Fasten the project employee turnover	0.65	10
Increase end user satisfaction.	0.61	11
Work load increased but work quality decreased	0.58	12
Create good work environment and relationships between stakeholders	0.52	13

Source: survey result, 2024

It was indicated in the above table 4.4.17, the most important effect of scope change on project, Contractor in the performance of Kality dry port and terminal project that agreed by respondents ranking from 1-3. These are, Exposed for high exchange rate and higher market price inflation, and Requested an additional Finance/budget/.

According to all responses, Forced to omit, reduce, or/and cancel some predefined scope partially or fully as it has the first rank among all factors with RII = 0.92, Exposed for high exchange rate and higher market price inflation with RII=0.86, and Requested an additional Finance/budget/ with RII=0.81. These are the most dominant Effect of scope change on project client in the performance of Kality dry port and terminal project.

4.4.2 Effect of scope change on project contractor

Table 4.4.2.1: Effect of scope change on contractor

Request a planned additional Manpower, Equipment, material, technology etc.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Average significance	7	22.6	22.6	22.6
	High significance	18	58.1	58.1	80.6
	Extreme Significant	6	19.4	19.4	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As showed in the above table 4.4.2.1, Establish a baseline scope early in order to identify and recognize changes rated by a total of 31 respondents, 22 (71%) rated as a high factor, 12(30%) rated as a very high factor and 4 (10%) rated as medium factor.

Table 4.4.2.2: Benefit by extended project completion date

Benefit by extended project completion date					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	10	32.3	32.3	32.3
	Minor significance	9	29.0	29.0	61.3
	Average significance	2	6.5	6.5	67.7
	High significance	7	22.6	22.6	90.3
	Extreme Significant	3	9.7	9.7	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As indicated in the above table 4.4.2.2, Establish a baseline scope early in order to identify and recognize changes rated by a total of 31 respondents, 22 (71%) rated as a high factor, 12(30%) rated as a very high factor and 4 (10%) rated as medium factor.

Table 4.4.2.3: Benefited in generating an additional income due to addition workload

Benefited in generating an additional income due to additional workload.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	1	3.2	3.2	3.2
	Minor significance	3	9.7	9.7	12.9
	Average significance	11	35.5	35.5	48.4
	High significance	10	32.3	32.3	80.6
	Extreme Significant	6	19.4	19.4	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicated in the above table 4.4.2.3, Benefited in generating an additional income due to additional workload rated by a total of 31 respondents, 11 (35.5%) rated as an average significance factor, 10 (32.3%) rated as a high significance factor and 6 (19.4%) rated as an extreme significance factor

Table 4.4.2.4: Forced to omit, reduce and cancel some predefined scope

Forced to omit, reduce, or/and cancel some predefined scope partially or fully, consequently loss profit.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	2	6.5	6.5	6.5
	Minor significance	4	12.9	12.9	19.4
	Average significance	5	16.1	16.1	35.5
	High significance	11	35.5	35.5	71.0
	Extreme Significant	9	29.0	29.0	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As showed in the above table 4.4.2.4, Establish a baseline scope early in order to identify and recognize changes rated by a total of 31 respondents, 22 (71%) rated as a high factor, 12(30%) rated as a very high factor and 4 (10%) rated as medium factor.

Table 4.4.2.5: The intended end service not obtain on time

The intended end service not obtain on time					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor significance	4	12.9	12.9	12.9
	Average significance	5	16.1	16.1	29.0
	High significance	15	48.4	48.4	77.4
	Extreme Significant	7	22.6	22.6	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it was indicated in the above table 4.4.2.5, the intended end service not obtain on time rated by a total of 31 respondents, 15 (48.4%) rated as a high significance factor, 7(22.6%) rated as an extreme factor and 5 (16.1%) rated as an Average significance factor.

Table 4.4.2.6: Delay the work performance as a result resource would be like

Delay the work performance as a result resource would be idle					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor significance	2	6.5	6.5	6.5
	Average significance	11	35.5	35.5	41.9
	High significance	13	41.9	41.9	83.9
	Extreme Significant	5	16.1	16.1	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was showed in the above table 4.4.2.6, Delay the work performance as a result resource would be idle rated by a total of 31 respondents, 13 (41.9%) rated as a high significance factor, 11(35.5%) rated as an Average significance factor and 5 (16.1%) rated as an extreme significance factor.

Table 4.4.2.7: Increase workload on design modification, review and bill of quantity

Increase work load on design modification, review and bill of quantity preparation					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	1	3.2	3.2	3.2
	Minor significance	3	9.7	9.7	12.9
	Average significance	6	19.4	19.4	32.3
	High significance	15	48.4	48.4	80.6
	Extreme Significant	6	19.4	19.4	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it showed in the above table 4.4.2.7, Increase workload on design modification, review and Bill of quantity preparation rated by a total of 31 respondents, 15 (48.4%) rated as a high factor, 6 (19.4%) rated as an average significance factor and 6 (19.4%) rated as an extreme factor.

Table 4.4.2.8: Exposed for high exchange rate and high market price inflation

Exposed for high exchange rate and high market price inflation					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Average significance	2	6.5	6.5	6.5
	High significance	7	22.6	22.6	29.0
	Extreme Significant	22	71.0	71.0	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicated in the above table 4.4.2.8, Exposed for high exchange rate and high market price inflation rated by a total of 31 respondents, 22 (71%) rated as an extreme significant factor, 7(22.6%) rated as a high significance factor and 2 (6.5%) rated as an average significance factor.

Table 4.4.2.9: Develop good environment and relationships between stakeholders

Develop good work environment and relationships between stakeholders employee					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	7	22.6	22.6	22.6
	Minor significance	6	19.4	19.4	41.9
	Average significance	10	32.3	32.3	74.2
	High significance	5	16.1	16.1	90.3
	Extreme Significant	3	9.7	9.7	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicated in the above table 4.4.2.9, Develop good work environment and relationships between stakeholders employee rated by a total of 31 respondents, 10 (32.3%) rated as an average significant factor, 7(22.6%) rated as a no significance factor and 6 (19.4%) rated as a minor significance factor.

Table 4.4.2.10: Became a means of endurance for stakeholders to complete the project

Become a means of endurance for stake holders to complete the project with in the specified cost and time					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	7	22.6	22.6	22.6
	Minor significance	6	19.4	19.4	41.9
	Average significance	10	32.3	32.3	74.2
	High significance	7	22.6	22.6	96.8
	Extreme Significant	1	3.2	3.2	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As indicated in the above table 4.4.2.10, Become a means of endurance for stakeholders to complete the project with in the specified cost and time rated by a total of 31 respondents, 10 (32.3%) rated as an average significance factor, 7(22.6%) rated as no significance factor and 6 (10%) rated as minor significance factor.

Table 4.4.2.11: Become a means to improve his performance and responsibility to complete the project

Become a means to improve his performance and responsibility to complete the project.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	7	22.6	22.6	22.6
	Minor significance	5	16.1	16.1	38.7
	Average significance	12	38.7	38.7	77.4
	High significance	4	12.9	12.9	90.3
	Extreme Significant	3	9.7	9.7	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicated in the above table 4.4.2.11, Become a means to improve his performance and responsibility to complete the project rated by a total of 31 respondents, 12 (38.7%) rated as an

average significance factor, 7 (22.6%) rated as a no significance factor and 6 (10%) rated as minor significance factor.

Table 4.4.2.12: Become a means of disputes among project stakeholders

Become a means of disputes among project involved stakeholders and breach of the contract					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	1	3.2	3.2	3.2
	Minor significance	2	6.5	6.5	9.7
	Average significance	8	25.8	25.8	35.5
	High significance	10	32.3	32.3	67.7
	Extreme Significant	10	32.3	32.3	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

Showed as in the above table 4.4.2.12, Become a means of disputes among project involved stakeholders and breach of the contract rated by a total of 31 respondents, 10 (32.3%) rated as an extreme significance factor, 10(32.3%) rated as a high significance factor and 8 (25.8%) rated as an average significance factor.

Table 4.4.2.13: Become a means of unemployment, consequently a means of psychological, financial

Become a means of unemployment, consequently a means of psychological, financial and social problem					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor significance	3	9.7	9.7	9.7
	Average significance	11	35.5	35.5	45.2
	High significance	6	19.4	19.4	64.5
	Extreme Significant	11	35.5	35.5	100.0
	Total	31	100.0	100.0	

Source: survey result, 2016

It has indicated in the above table 4.4.2.13, Become a means of unemployment, consequently a means of psychological, financial and social problem rated by a total of 31 respondents, 11 (35.5%) rated as an extreme significance factor, 11(35.5%) rated as an average significance factor and 6 (19.4%) rated as high significance factor.

Table 4.4.2.14: Create higher overhead costs an very less income

Create higher overhead costs and very less income					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor significance	2	6.5	6.5	6.5
	Average significance	10	32.3	32.3	38.7
	High significance	9	29.0	29.0	67.7
	Extreme Significant	10	32.3	32.3	100.0
	Total	31	100.0	100.0	

Source: survey result, 2016

As showed in above table 4.4.2.14, Create higher overhead costs and very less income rated by a total of 31 respondents, 10 (32.3%) rated as an extreme significance factor, 10 (32.5%) rated as an average significance factor and 9 (29%) rated as high significance factor.

Table 4.4.2.15: Uselessness and dizziness feeling created over the employee

Uselessness and dizziness feeling created over the employee due to suspension of the project activity					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor significance	3	9.7	9.7	9.7
	Average significance	5	16.1	16.1	25.8
	High significance	12	38.7	38.7	64.5
	Extreme Significant	11	35.5	35.5	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicated in the above table 4.4.2.15, Uselessness and dizziness feeling created over the employee due to suspension of the project activity rated by a total of 31 respondents, 12 (38.7%) rated as a high significance factor, 11 (35.5%) rated as an extreme significance factor and 5 (16.1%) rated as an average significance factor.

After analyzing the frequency of each item Relative importance index, (RII) analysis was conducted. The higher value of RII shows the most weighted significant effect of scope change on project stakeholders Such as, Contractor in the performance of Kality dry port and terminal project and the lower RII value indicates the low effects factor.

Table 4.4.2.16: Ranking of the effect of scope change on contractor

Items	RII	Rank
Lead to company bankruptcy	0.93	1
Become a means of unemployment, consequently a means of psychological, financial and social problem.	0.80	2
Exposed for high exchange rate and high market price inflation	0.80	2
Request planned additional Manpower, Equipment, material, technology etc.	0.79	4
Become a means of disputes among project involved stakeholders and breach of the contract	0.77	5
Create higher overhead costs and very less income	0.77	5
Uselessness and dizziness feeling created over the employee due to suspension of the project activity	0.76	7
The intended end service not obtain on time	0.76	7
Increase work quality, so that forced to spend more money than planned.	0.74	8
Benefit by extended project completion date	0.50	15
Forced to omit, reduce, or/and cancel some predefined scope partially or fully, consequently loss profit.	0.73	9
Delay the work performance as a result resource would be idle.	0.73	9
Benefit in generating an additional income due to additional work without bid expenses.	0.71	11
Become a means to improve his performance and responsibility to complete the project.	0.54	12
Develop good work environment and relationships between stakeholders employee	0.54	12
Become a means of endurance for stakeholders to complete the project with in the specified cost and time.	0.53	14

Source: survey result, 2024

As showed in the above table 4.4.2.16, The most important effect of scope change on project Contractor in the performance of Kality dry port and terminal project that, agreed by respondents ranking from 1-3. These are, Lead to company bankruptcy, exposed for higher material cost inflation and become a means of psychological, financial and social problem for project employee.

According to all responses, Lead to company bankruptcy as it has the first rank among all factors with RII = 0.93, exposed for higher material cost inflation and become a means of psychological, financial and social problem for project employee both with RII, =0.80**.** These are the most dominant effect of scope change on project stakeholders Such as, Contractor in the performance of Kality dry port and terminal project.

4.4.3 Effect of scope change on project consultant

Table 4.4.3.1: Forced to deploy and planned additional work force, equipment...

Forced to deploy an planned additional Manpower, Equipment, material, technology etc.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	1	3.2	3.2	3.2
	Minor significance	2	6.5	6.5	9.7
	Average significance	5	16.1	16.1	25.8
	High significance	13	41.9	41.9	67.7
	Extreme Significant	10	32.3	32.3	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicated in the above table 4.4.3.1, Forced to deploy a planned additional Manpower, Equipment, material, technology rated by a total of 31 respondents, 13 (41.9%) rated as a high factor, 10(32.3%) rated as a high significance factor and 5 (16.1%) rated as average significance factor.

Table 4.4.3.2: Benefited by extended project completion date

Benefited by extended project completion date					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	2	6.5	6.5	6.5
	Minor significance	5	16.1	16.1	22.6
	Average significance	7	22.6	22.6	45.2
	High significance	9	29.0	29.0	74.2
	Extreme Significant	8	25.8	25.8	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it indicated in the above table 4.4.3.2, Benefited by extended project completion date rated by a total of 31 respondents, 9 (29%) rated as a high significance factor, 8(25.8%) rated as an extreme significance factor and 7 (22.6%) rated as average significance factor.

Table 4.4.3.3: Benefited in generating an additional income due to additional workload

Benefited in generating an additional income due to additional workload.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	1	3.2	3.2	3.2
	Minor significance	3	9.7	9.7	12.9
	Average significance	11	35.5	35.5	48.4
	High significance	10	32.3	32.3	80.6
	Extreme Significant	6	19.4	19.4	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it showed in the above table 4.4.3.3, Benefited in generating an additional income due to additional workload rated by a total of 31 respondents, 11(29%) rated as an average significance factor, 10(32.3%) rated as a high significance factor and 6(19.4%) rated as extreme significance factor.

Table 4.4.3.4: Forced to reduce the consultancy fee due to suspension of activity

Forced to reduce the consultancy fee due to suspension of activity					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor significance	10	32.3	32.3	32.3
	Average significance	3	9.7	9.7	41.9
	High significance	11	35.5	35.5	77.4
	Extreme Significant	7	22.6	22.6	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it indicated in the above table 4.4.3. 4, Forced to reduce the consultancy fee due to suspension of activity rated by a total of 31 respondents, 11 (35.5%) rated as a high significance factor, 10(32.3%) rated as no significance factor and 7 (22.6%) rated as an extreme significance factor.

Table 4.4.3.5: Increase workload on contract administration and supervision

Increase work load on contract administration and supervision					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	1	3.2	3.2	3.2
	Minor significance	2	6.5	6.5	9.7
	Average significance	9	29.0	29.0	38.7
	High significance	14	45.2	45.2	83.9
	Extreme Significant	5	16.1	16.1	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicated in the above table 4.4.3.5, Increase workload on contract administration and supervision rated by a total of 31 respondents, 14 (45.2%) rated as a high significance factor, 9(29%) rated as an average significance factor and 5 (16.1%) rated as an extreme significance factor.

Table 4.4.3.6: Increase workload on design modification, review and bill o quantity preparation

Increase work load on design modification, review and Bill of quantity preparation					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	1	3.2	3.2	3.2
	Minor significance	3	9.7	9.7	12.9
	Average significance	6	19.4	19.4	32.3
	High significance	15	48.4	48.4	80.6
	Extreme Significant	6	19.4	19.4	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it showed in the above table 4.4.3.6, Increase workload on design modification, review and Bill of quantity preparation rated by a total of 31 respondents, 15 (48.4%) rated as a high significance factor, 6(19.4%) rated as an extreme significance factor and 6 (19.4%) rated as an average significance factor.

Table 4.4.3.7: Exposed for high exchange rate and high market price inflation

Exposed for high exchange rate and high market price inflation					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	4	12.9	12.9	12.9
	Minor significance	9	29.0	29.0	41.9
	Average significance	2	6.5	6.5	48.4
	High significance	12	38.7	38.7	87.1
	Extreme Significant	4	12.9	12.9	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicated in the above table 4.4.3.7, Exposed for high exchange rate and high market price inflation rated by a total of 31 respondents, 12 (48.4%) rated as a high significance factor, 9(29%) rated as a minor significance factor and 4 (12.9%) rated as an extreme significance factor.

Table 4.4.3.8: Develop good work relationships between designer and project supervisory staff

Develop good work relationships between designer and project supervisory staff					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	1	3.2	3.2	3.2
	Minor significance	10	32.3	32.3	35.5
	Average significance	6	19.4	19.4	54.8
	High significance	10	32.3	32.3	87.1
	Extreme Significant	4	12.9	12.9	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it showed in the above table 4.4.3.8, Develop good work relationships between designer and project supervisory staff rated by a total of 31 respondents, 10 (32.3%) rated as a high significance factor, 10(32.3%) rated as a minor significance factor and 9 (19.4%) rated as an average significance factor.

Table 4.4.3.9: Become a means of endurance for supervisory staff to complete the project

Become a means of endurance for supervisory staff to complete the project with in the specified cost and time.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	2	6.5	6.5	6.5
	Minor significance	19	61.3	61.3	67.7
	Average significance	4	12.9	12.9	80.6
	High significance	4	12.9	12.9	93.5
	Extreme Significant	2	6.5	6.5	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it showed in the above 4.4.3.9, Become a means of endurance for supervisory staff to complete the project with in the specified cost and time rated by a total of 31 respondents, 19 (61.3%) rated as a minor significance factor, 4(12.9%) rated as an average significance factor and 4 (12.9%) rated as an average significance factor.

Table 4.4.3.10: Become a means to improve the project performance

Become a means to improve the project performance					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	2	6.5	6.5	6.5
	Minor significance	12	38.7	38.7	45.2
	Average significance	6	19.4	19.4	64.5
	High significance	8	25.8	25.8	90.3
	Extreme Significant	3	9.7	9.7	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicated in the above table 4.4.3.10, Become a means to improve the project performance rated by a total of 31 respondents, 12 (38.7%) rated as a minor significance factor, 8(25.8%) rated as a high significance factor and 6 (19.4%) rated as an average significance factor.

Table 4.4.3.11: Become a means of contractual disputes among project involved stakeholders

Become a means of contractual disputes among project involved stakeholders and breach of the contract					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor significance	5	16.1	16.1	16.1
	Average significance	3	9.7	9.7	25.8
	High significance	16	51.6	51.6	77.4
	Extreme Significant	7	22.6	22.6	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it indicate I the above table 4.4.3.11, Become a means of contractual disputes among project involved stakeholders and breach of the contract rated by a total of 31 respondents, 16 (51.6%) rated as a high significance factor, 7(16.1%) rated as an extreme significance factor and 5 (16.1%) rated as a minor significance factor.

Table 4.4.3.12: Become a means for loss of the job

Become a means for loss of the job.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No significance	6	19.4	19.4	19.4
	Minor significance	1	3.2	3.2	22.6
	Average significance	8	25.8	25.8	48.4
	High significance	11	35.5	35.5	83.9
	Extreme Significant	5	16.1	16.1	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was showed in the above table 4.4.3.12, Become a means for loss of the job rated by a total of 31 respondents, 11 (35.5%) rated as a high significance factor, 8(25.8%) rated as an average significance factor and 6 (19.4%) rated as no significance factor.

Table 4.4.3.13: Create psychological, financial and social problem on the project employee

Create psychological, financial and social problem on the project employee.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor significance	5	16.1	16.1	16.1
	Average significance	6	19.4	19.4	35.5
	High significance	15	48.4	48.4	83.9
	Extreme Significant	5	16.1	16.1	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it showed in the above table 4.4.3.13, Create psychological, financial and social problem on the project employee rated by a total of 31 respondents, 15 (48.4%) rated as a high significance factor, 6 (19.4%) rated as an average significance factor and 5 (16.1%) rated as an extreme significance factor.

Table 4.4.3.14: Quality inspection work affected

Quality inspection work affected.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor significance	6	19.4	19.4	19.4
	Average significance	3	9.7	9.7	29.0
	High significance	16	51.6	51.6	80.6
	Extreme Significant	6	19.4	19.4	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it indicated in the above table 4.4.3.14, Quality inspection work affected rated by a total of 31 respondents, 16 (51.6%) rated as a high significance factor, 6 (19.4%) rated as an extreme significance factor and 6 (19.4%) rated as a minor significance factor.

Table 4.4.3.15: Uselessness and dizziness feeling created to employee due to suspension of the project

Uselessness and dizziness feeling created over the employee due to suspension of the project activity					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Minor significance	8	25.8	25.8	25.8
	Average significance	2	6.5	6.5	32.3
	High significance	12	38.7	38.7	71.0
	Extreme Significant	9	29.0	29.0	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicated in the above table 4.4.3.15, Become a means of contractual disputes among project involved stakeholders and breach of the contract rated by a total of 31 respondents, 16 (51.6%) rated as a high significance factor, 7 (16.1%) rated as an extreme significance factor and 5 (16.1%) rated as a minor significance factor.

After analyzing the frequency of each item Relative importance index, (RII) analysis was conducted. The higher value of RII shows the most weighted significant effect of scope change on project, Consultant in the performance of Kality dry port and terminal project factor that contribute to the root causes of project predefine Scope change and the lower RII value indicates the low effects factor.

Table 4.4.3.16: The effect of the scope change on the project consultant

Items	RII	Rank
Increase work load on contract administration and supervision	0.79	1
Become a means of contractual disputes among project involved stakeholders and breach of the contract	0.76	2
Uselessness and dizziness feeling created over the employee due to suspension of the project activity	0.74	3
Increase work load on design modification, review and Bill of quantity preparation	0.74	3
Quality inspection work affected.	0.74	3
Forced to deploy an planned additional Manpower, Equipment, material, technology etc.	0.73	5
Create psychological, financial and social problem on the project employee.	0.72	6
Benefited in generating an additional income due to additional workload.	0.71	7

Benefited by extended project completion date	0.70	8
Forced to reduce the consultancy fee due to suspension of activity	0.69	9
Become a means for loss of the job.	0.65	10
Develop good work relationships between designer and project supervisory staff	0.64	11
Exposed for high exchange rate and high market price inflation	0.62	12
Become a means to improve the project performance	0.59	13
Become a means of endurance for supervisory staff to complete the project with in the specified cost and time.	0.50	14

Source: survey result, 2024

It was showed in the above table 4.4.3.16, The most important effect of scope change on project Consultant in the performance of Kality dry port and terminal project that, agreed by respondents ranking from 1-3. These are, Increase work load due to repeated design modification, review and Bill of quantity preparation, become a means of disputes between consultant and client and uselessness and dizziness feeling created over the consultant supervisory employee due to suspension of the project activity.

According to all responses, Increase work load due to repeated design modification, review and Bill of quantity preparation as it has the first rank among all factors with RII = 0.79, Become a means of contractual disputes among project involved stakeholders and breach of the contract with RII=0.76. Uselessness and dizziness feeling created over the employee due to suspension of the project activity with RII=0.74 respectively**.** These are the most dominant Effect of scope change on project Consultant in the performance of Kality dry port and terminal project.

4. 5: Strategies to reduce scope change in Construction projects.

Based on the responses of the respondents and secondary sources related to best practices to reduce project scope change, the potential strategies are presented in table 4(5)15 below.

Table 4(5)1: Establish a baseline scope early in order to identify and recognize changes

Establish a baseline scope early in order to identify and recognize changes					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	2	6.5	6.5	6.5
	Agree	22	71.0	71.0	77.4
	strongly agree	7	22.6	22.6	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As showed in the above table 4(5)1, Out of the 31 respondents, 22(71%) rated as a agree, and 7(22.6%) strongly agree, with the degree of Establish a baseline scope early in order to identify and recognize changes.

Table 4(5)2: Develop an additional overview of a contracting strategy that ties to the baseline document

Develop an initial overview of a contracting strategy that ties to the baseline documents for scope, schedule and cost					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	7	22.6	22.6	22.6
	Agree	16	51.6	51.6	74.2
	strongly agree	8	25.8	25.8	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicated in the above table 4(5)2, Out of the 31 respondents, 16(51.6%) rated as a agree, and 8(29%) strongly agree, with the degree of Develop an initial overview of a contracting strategy that ties to the baseline documents for scope, schedule and cost.

Table 4(5)3: List the project functions and identify the ultimate objectives of the project

list the project functions and identify the ultimate objectives of the project					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	3	9.7	9.7	9.7
	Agree	15	48.4	48.4	58.1
	strongly agree	13	41.9	41.9	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it indicated in the above table 4(5)3, Out of the 31 respondents, 15(48.4%) rated agree, and 13(41.9%) strongly agree, with the degree of list the project functions and identify the ultimate objectives of the project.

Table 4(5)4: Develop effective scope execution method and controlling system

Develop effective scope execution method and controlling system.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	2	6.5	6.5	6.5
	Agree	17	54.8	54.8	61.3
	strongly agree	12	38.7	38.7	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was showed in the above table 4(5)4, Out of the 31 respondents, 17(54.8%) agree, and 12(38.7%) strongly agree, with the degree of Develop effective scope execution method and controlling system

Table 4(5)5: Higher independent well-experienced scope planner advisory consulting firm

Higher independent well experienced scope planner advisory consulting firm to control later project scope change					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	22	71.0	71.0	71.0
	strongly agree	9	29.0	29.0	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it showed in the above 4(5)5, Out of the 31 respondents, 22(71%) agree, and 9(29%) strongly agree, with the degree of Higher independent well experienced scope planner advisory consulting firm to control later project scope change.

Table 4(5)6: Develop risk allocation and risk mitigation mechanism during project scope definition.

Develop risk allocation and risk mitigation mechanism during project scope definition					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	3	9.7	9.7	9.7
	Agree	20	64.5	64.5	74.2
	strongly agree	8	25.8	25.8	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicated in the above table 4(5)6, Out of the 31 respondents, 20(64.5%) rated strongly agree, and 8 (25.8%) strongly agree, with the degree of Develop risk allocation and risk mitigation mechanism during project scope definition.

Table 4(5)7: Assign experience and knowledgeable personnel that in evaluating any proposed changes.

Assign experienced and knowledgeable personnel that are involved in evaluating any proposed changes to make sure changes are beneficial and not detrimental.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	5	16.1	16.1	16.1
	Agree	23	74.2	74.2	90.3
	strongly agree	3	9.7	9.7	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it showed in the above table 4(5)7, Out of the 31 respondents, 23(74.2%) rated agree, and 5(16.1%) neutral with the degree of High foreign exchange rate .Assign experienced and knowledgeable personnel that are involved in evaluating any proposed changes to make sure changes are beneficial and not detrimental.

Table 4(5)8: Provide continues training to the sector stakeholders.

Provide continues training to the sector stake holders					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	5	16.1	16.1	16.1
	Neutral	8	25.8	25.8	41.9
	Agree	14	45.2	45.2	87.1
	strongly agree	4	12.9	12.9	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was showed in the above table 4(5)8, Out of the 31 respondents, 14 (45.2%) rated agree, and 8 (25.8%) rated neutral, and 5 (16.1%) rated disagree with the degree of Provide continues training to the sector stake holders.

Table 4(5)9: Owner ensure the base scope of works is well defined and be willing to freeze the scope.

Owner must ensure the base scope of works is well defined and must be willing to freeze the scope to establish a benchmark.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	1	3.2	3.2	3.2
	Agree	27	87.1	87.1	90.3
	strongly agree	3	9.7	9.7	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicated in the above table 4(5)9, Out of the 31 respondents, 27(87.1%) rated agree, and 3(9.7%) strongly agree, with the degree of Owner must ensure the base scope of works is well defined and must be willing to freeze the scope to establish a benchmark.

Table 4(5)10: Set a change management plan early; integrate with the project execution plan.

Set a change management plan early, integrate with the project execution plan and are communicated to and understood by all party.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	11	35.5	35.5	35.5
	Agree	18	58.1	58.1	93.5
	strongly agree	2	6.5	6.5	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it indicated in the above table 4(5)10, Out of the 31 respondents, 18 (58.1%) rated agree, and 11 (35.5%%) agree, with the degree of Set a change management plan early integrate with the project execution plan and are communicated to and understood by all party.

Table 4(5)11: Create a special commitment plant form to forcibly, apply a penalty to who initiate change.

Create a special commitment plat form to forcibly, apply a penalty to those who initiate change and impact the project baseline.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	8	25.8	25.8	25.8
	Neutral	2	6.5	6.5	32.3
	Agree	17	54.8	54.8	87.1
	strongly agree	4	12.9	12.9	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it showed in the above table 4(5)11, Out of the 31 respondents, 17 (54.8%) rated agree, and 8 (25.8%) disagree, with the degree of. Create a special commitment plat form to forcibly, apply a penalty to those who initiate change and impact the project baseline

Table 4(5)12: Build the contractor change accommodating capacity.

Build the contractor change accommodating capacity					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	2	6.5	6.5	6.5
	Disagree	1	3.2	3.2	9.7
	Neutral	14	45.2	45.2	54.8
	Agree	12	38.7	38.7	93.5
	strongly agree	2	6.5	6.5	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

It was indicated in the above table 4(5)12, Out of the 31 respondents, 14 (45.2%) rated neutral, and 12 (38.7%) agree, with the degree of Build the contractor change accommodating capacity

Table 4(5)13: Facilitate compensation for the sector stakeholders to with stand the subsequent change.

Facilitate compensation for the sector stakeholders to with stand the subsequent change impact.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	11	35.5	35.5	35.5
	Agree	18	58.1	58.1	93.5
	strongly agree	2	6.5	6.5	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it showed in the above table 4(5)13, Out of the 31 respondents, 18 (58.1%) rated agree, and 11 (35.5%) neutral, with the degree of Facilitate compensation for the sector stakeholders to with stand the subsequent change impact.

Table 4(5)14: Reduce the communication gap between stakeholders.

Reduce the communication gap between stakeholders					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly disagree	9	29.0	29.0	29.0
	Disagree	7	22.6	22.6	51.6
	Neutral	3	9.7	9.7	61.3
	Agree	11	35.5	35.5	96.8
	strongly agree	1	3.2	3.2	100.0
	Total	31	100.0	100.0	

Source: survey result, 2024

As it indicated in above table 4(5)14, Out of the 31 respondents, 11(35.5%) rated agree, and 9 (29%) strongly disagree, with the degree of Reduce the communication gap between stakeholders.

After analyzing the frequency of each item Relative importance index, (RII) analysis was conducted. The higher value of RII shows the most weighted significant Factors, used to develop effective project scope, change strategies in the performance of Kality dry port and terminal **project** and the lower RII value indicates the low effects factor.

Table 4(5)15: Ranking the strategies used to overcome project scope, change impact.

Items	RII	Rank
Set a change management plan early, integrate with the project execution plan and communicate to project designer and supervisor	0.86	1
Establish scope control process on variation approval" procedures for internal control purposes, however, it is important that a scope of works tracking, measuring and analysis scheme is devised.	0.86	1
Establish higher independent and well experienced scope planner consulting firm to control later project scope change	0.85	3

Assign experienced and knowledgeable personnel that are involved in performing qualitative and quantitative risk process to make sure changes are beneficial and not detrimental	0.85	3
Involved higher independent and well-experienced scope planner, tracker and change controller advisory consulting firm to manage scope change.	0.83	4
Establish a scope baseline early in order to identify and recognize changes	0.83	4
Develop scope management manual and provide discretions for the procedures to follow in scope planning, management and monitoring and evaluation.	0.83	4
Develop an initial overview of a contracting strategy that ties to the baseline documents for scope, schedule and cost	0.81	6
Establish scope plan management on critical project contract documents analysis and get experience in the type of the construction work.	0.81	6
Owner must ensure the scope base of works is well defined and must be willing to freeze the scope to establish a benchmark.	0.80	7
Establish risk allocation and mitigation mechanisms during project scope definition.	0.80	7
Facilitate compensation for the sector stakeholders to with stand the subsequent change impact.	0.74	9
Facilitate compensation for the stakeholders sector to with stand the subsequent change impact.	0.74	9
Provide continues training and capacity building to the sector stake holders	0.71	11
Capacity building for the contractor to accommodating the change	0.67	12
Create special commitment plat form to forcibly, apply a penalty to those who initiate change and affect the project baseline.	0.66	13
Reduce the communication gap between the stakeholders	0.52	14

Source: survey result, 2024

As it showed in the above table 4(5)15, The most important effective project scope change strategies in the performance of Kality dry port and terminal project that, agreed by respondents ranking from 1-3. These are, set a change management plan early, integrate with the project execution plan, and communicate to project designer and supervisor, higher independent and well-experienced scope planner advisory consulting firm to control later project scope change. In addition, assign experienced and knowledgeable personnel that are involved in performing qualitative and quantitative risk process to make sure changes are beneficial and not detrimental

According to all responses, set a change management plan early, integrate with the project execution plan, and communicate to project designer and supervisor and higher independent well experienced scope planner advisory consulting firm to control later project scope change as it have the first rank among all factors with RII = 0.86 respectively. In addition, assign experienced and knowledgeable personnel that are involved in performing qualitative and quantitative risk process to make sure changes are beneficial and not detrimental with RII=0.85**.** These are the most dominant effective project scope, change strategies in the performance of Kality dry port and terminal project.

CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION

5. Summary

- ✓ According to the case study, need for better quality with RII = 0.90 and study exclusively verified that need of better quality is an outstanding major causes of scope change.
- ✓ High current market inflation with RII = 0.79, Delay in completion and increase project cost, with RII= 0.77 decrease project scopes with RII, = 0.73 are the most dominant impacts of scope change on the performance of Kality dry port and terminal construction projects.
- ✓ Forced to omit, reduce, or/and cancel some predefined scope partially or fully with RII = 0.92, Exposed for high exchange rate and higher market price inflation with RII=0.86, and Requested an additional Finance/budget/ with RII=0.81 are the most dominant Effect of scope change on project client in the performance of Kality dry port and terminal project.
- ✓ Lead to company bankruptcy as it has the first rank among all factors with RII = 0.93, exposed for higher material cost inflation and become a means of psychological, financial and social problem for project employee both with RII, =0.80. These are the most dominant effect of scope change on project stakeholders Such as, Contractor in the performance of Kality dry port and terminal project.
- ✓ Increase workload due to repeated design modification, review and Bill of quantity preparation with RII = 0.79, Become a means of contractual disputes among project involved stakeholders and breach of the contract with RII=0.76. Uselessness and dizziness feeling created over the employee due to suspension of the project activity with RII=0.74 respectively are the most dominant Effect of scope change on project Consultant in the performance of Kality dry port and terminal project.
- ✓ Set a change management plan early, integrate with the project execution plan, and communicate to project designer and supervisor and higher independent well experienced scope planner advisory consulting firm to control later project scope change with RII = 0.86 respectively are the most dominant effective project scope, change strategies in the performance of Kality dry port and terminal project.

5.1 Conclusion

This research achieved its objective by answering the research questions in the summary of findings. It reports the cause and major impact of Predefined Scope Change in the performance of Kality dry port and terminal project. The data used in this investigation obtained from both primary and secondary sources. Results from the quantitative and qualitative survey analysis showed there are several cause and impact of Predefined Scope Change in the performance of Kality dry port and terminal project.

Need for better quality, Luck of experience in planning and defining project scope are the most dominant factors that contribute to the root causes of project predefine Scope change in the Kality dry port construction project.

High current market inflation, delay in completion and increase project cost and decrease project scopes are the most dominant factors that affect the predefined project scope change on Kality dry port construction project.

Forced to omit, reduce, or/and cancel some predefined scope partially or fully, Exposed for high exchange rate and higher market price inflation and Requested an additional Finance/budget/ are the most dominant effect of scope change on project client in the performance of Kality dry port and terminal project.

Lead to company bankruptcy, exposed for higher material cost inflation and become a means of psychological, financial and social problem for project employee are the most dominant effect of scope change on project, Contractor in the performance of Kality dry port and terminal project.

Increase workload due to repeated design modification, review and bill of quantity preparation, Become a means of contractual disputes among project involved stakeholders and breach of the contract are the most actors. In addition, Uselessness and dizziness feeling created over the employee due to suspension of the project activity are the most dominant effect of scope change on project Consultant in the performance of Kality dry port and terminal project.

Set a change management plan early, integrate with the project execution plan, and communicate to project designer, supervisor, and higher independent well-experienced scope planner advisory consulting firm to control later project scope change are the effective factors. In addition, assign experienced and knowledgeable personnel that are involved in performing qualitative and quantitative risk process to make sure changes are beneficial and not detrimental are the most dominant effective project scope, change strategies in the performance of Kality dry port and terminal project.

5.2 Recommendation

Based on the major findings and conclusion the following recommendations are presented.

- ✓ The consulting team recommended to facilitating scope control by using several tools and techniques, such as a scope change, request document, a change control board and a scope change log to maintain the scope baseline, and to ensure that the project delivers the agreed scope and meets the stakeholder satisfaction.
- ✓ The consulting group should have to consult and propose other alternative to overcome project failure because of poor project scope definition and unfavorable changes that occurred in project scope either during the planning phase or during executing phase.
- ✓ Client has recommended to Cleary define the project need, objective and function by establishing project scope at early stage of project initiation period by assigning competent scope planner professional.
- ✓ The contractor recommended to proceed other parts of the project that do not need project scope change to save time and minimize the cost of material increased due to market fluctuation.
- ✓ The contractor has recommended to look for other finance source in order to complete the suspended rigid pavement work and escape contractual penalty and dispute
- ✓ The Client and Consultant recommended having current and structured information to develop their own change management strategies to reduce the negative impact of scope change on the organization as well as their individual employee and /or project objectives.

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Annex I

ADDIS COLLEGE, SCHOOL OF POST GRADUATE STUIES,

DEPARTMENT OF CONSTRUCTION TECHNOLOGY AND MANAGEMENT

Dear Participants,

I would like to encompass my gratitude to each one of you for participating in this research. The goals of this survey are to obtain data for the specified research will conduct in partial fulfillment of the requirements for the Master of Science in Construction Technology and Management. This questionnaire is designed to survey all the project participants' opinions in "**Assessment on Impact of Predefined Scope Change** at Kality Dry Port and Terminal construction Project.

The case study questionnaire is to gather the most comprehensive data that contribute to various aspect of **Scope Change** in Kality Dry Port and Terminal Construction Project.

The questionnaire consists:

Part One: Profile of Respondents, Part Two: Causes of the scope change, Part Three: The impacts of scope change in the project, Part Four: Effect of scope change on project stake holders Such as, Client, Consultant and contractor. Part Five: Strategies that can be taken to minimize the scope change in construction projects. So that, the predefined project scope would executed with in the predetermined devised budget and time program.

For the structured part of the questionnaire, Likert's scale has utilized to measure agreement towards each statement.

Your response in this regard is highly valuable and contributes to the outcome of the study. I can assure you that your response will kept strictly confidential and the data collected will be analyzed collectively, hence it ensure anonymity. Only my academic adviser and I will have access to the information you provided, and a generalized analysis of the information contained within this completed questionnaire will exclusively utilized in this study process. Use my contact information

if there are any questions about the questionnaire that are unclear (if there are any). Thank you for your invaluable time and patience in advance.

Regards,

Ashenafi Assefa

Address

Tele Phone Number +251 919-29-48-00 or +251 960-76-53,

E-mail: asheyie@21gmail.com

November 2023, Addis Ababa, Ethiopia

Part one: General Information:

Please give your response to the questions, here by indicating with"√" your appropriate choice and/or idea by putting your answers in the space provided.

1.1. Your representation in the project:

☐ Contractor ☐ Consultant ☐ Contractor

1.2 Years of experience of the respondent:

☐ Less than 5years ☐ from 6 to 10 years ☐ from 11 to 15 years ☐ Over16years

1.3 Educational status of the respondent:

☐ Diploma ☐ B.Sc. ☐ M.Sc. ☐ PhD.

If other Please specify_____

1.4 Job Position/Description/ in the project

Contact Address (Optional)

Address, Tele Phone_____E-mail_____Name (optional)_____

Part Two: The factor that contribute to the root causes of project predefine Scope change.

2.1. The tables below contain lists of determinant factors that contribute to project scope change identified in the literature. What is the likely contribution of these factors to scope change in Kality Dry Port and Terminal Construction project that you have been involved in, based on your specific project experience? Please indicate your preference by marking **(√)** next to each rate of occurrence (frequency of occurrence) based on the representative numbers listed below;

AD=Strongly Disagree, D= Disagree, N=Neutral, A= Agree, SA= Strongly Agree

Table 2.1

` No.	Factor that contribute to the root cause of project predefine project scope change	SD	D	N	A	SA
1	Incompleteness of contract document					
2	Scarce/ Absences of the required material, equipment, budget and skilled man power.					
3	Inadequate working drawing details					
4	Design complexity, Change in design and specification by the consultant.					
5	lack of additional fund to the project.					
6	Scarcity of allocated budget to complete the project scope					
7	Need of better quality.					
8	Luck of experience in planning and defining project scope					
9	Week/Poor project scope definition					
10	Tightness and urgency of the project schedule					
11	Weak professional consultancy service					
12	Employer spontaneous interference and frequent change order.					
13	Contractor poor work methodology and scheduling.					
14	Lack or/and poor communication between the stakeholders.					
15	Least bid winner provision					
16	High current market inflation					
17	High foreign exchange rate					
18	PPA Provision of 30% variation works order right					

Part Three: The impacts of scope change in the performance of Kality dry port and terminal project?

3.1 The impacts of scope change in the projects that have been identified through literature are listed in the following table: Please mark (√) under reach preference to indicate which of the following lists of possible impact of scope change in the construction projects most frequent, based on your experience and the representative numbers listed below.

1- No significance 2 - Minor significance, 3 - Average significance, 4 - High significance

5- Extreme significance

Table 3.1

`No.	Impact of Scope Change on the performance of the project	1	2	3	4	5
1	Delay in completion and Increase project cost decrease project scopes					
2	Increase project performance and quality by incorporating the missed scope during scope planning and rework.					
3	Causes non value adding activities such as demolition, slower productivity, affects quality etc.					
4	Causes disputes between involved stakeholders,					
5	Open chance to apply updated technology, so that the project cost and time will save					
6	Create favorable condition for stakeholders to generate additional income					
7	Slower activity progress					
8	Disrupt the surrounding environment					
9	Causes contract termination					
10	Causes Company bankruptcy and shutdown					

Part Four: Effect of scope change on project stakeholders Such as, Client, Consultant and Contractor.

4.1 Due to the potential challenges that affect the scope change on project stakeholders Such as, Client, Consultant and Contractor. To address the effect of scope change encountered in Kality Dry Port and Terminal projects. There had been disputes and claims between the various constructions parties, which had ultimately hinder the performance of the construction projects due to the following that have identified through literature listed in the following table. Please mark **(√)** under each preference to indicate which of the following lists of possible challenges that had affect the scope change in the Kality Dry Port and Terminal construction project the most frequently, based on your experience and the representative numbers listed below.

1-No significance 2-Minor significance 3-Average significance 4-High significance

5. Extreme Significant

Table 4.2 (i)

`No.	Effect of scope change on project stake holders, Client	1	2	3	4	5
1	Requested an additional Finance/budget/					
2	Forced to extend project completion date					
3	Create opportunity to incorporating the missed scope.					
4	Forced to omit, reduce, or/and cancel some predefined scope partially or fully.					
5	Increase end user satisfaction.					
8	Work load increased but work quality decreased					
9	Exposed for high exchange rate and higher market price inflation					
10	Create favorable situation for fraud and corruption					
11	Create good work environment and relationships between stakeholders					
12	Improve the project management system and give chance to develop new strategy to complete the project with in the specified cost and time.					
13	Fasten the project employee turnover					
14	Create psychological, financial and social problem on the project employee.					
15	Create satisfaction due to upgraded work quality and newly incorporated scopes of works.					
16	Create dissatisfaction due to decrease of preplanned scope of works.					

Table 4.2 (ii)

`No.	Effect of scope change on contractor.	1	2	3	4	5
1	Request an planned additional Manpower, Equipment, material, technology etc.					
2	Benefit by extended project completion date					
3	Benefit in generating an additional income due to additional work without bid expenses.					
4	Forced to omit, reduce, or/and cancel some predefined scope partially or fully, consequently loss profit.					
5	The intended end service not obtain on time					
6	Delay the work performance as a result resource would be idle.					
7	Increase work quality, so that forced to spend more money than planned.					
8	Exposed for high exchange rate and high market price inflation					

9	Develop good work environment and relationships between stakeholders employee					
10	Become a means of endurance for stakeholders to complete the project with in the specified cost and time.					
11	Become a means to improve his performance and responsibility to complete the project.					
12	Become a means of disputes among project involved stakeholders and breach of the contract					
13	Become a means of unemployment, consequently a means of psychological, financial and social problem.					
16	Create higher overhead costs and very less income					
17	Uselessness and dizziness feeling created over the employee due to suspension of the project activity					

Table 4.2 (iii)

`No.	Effect of scope change on consultant	1	2	3	4	5
1	Forced to deploy an planned additional Manpower, Equipment, material, technology etc					
2	Benefited by extended project completion date					
3	Benefited in generating an additional income due to additional workload.					
4	Forced to reduce the consultancy fee due to suspension of activity					
5	Increase work load on contract administration and supervision					
6	Increase work load on design modification, review and Bill of quantity preparation					
7	Exposed for high exchange rate and high market price inflation					
8	Develop good work relationships between designer and project supervisory staff					
9	Become a means of endurance for supervisory staff to complete the project with in the specified cost and time.					
10	Become a means to improve the project performance					
12	Become a means of contractual disputes among project involved stakeholders and breach of the contract					
13	Become a means for loss of the job.					
14	Create psychological, financial and social problem on the project employee.					
15	Quality inspection work affected.					
16	Uselessness and dizziness feeling created over the employee due to suspension of the project activity					
17	Decrease the expected income					

Part Five: Strategies that can be taken to reduce the scope change in construction projects.

5.1. The tables below contain lists of strategies that contribute to reduce the scope change in construction project identified in the literature. What is the likely contribution of these factors to reduce scope change in your project "kality Dry Port and Terminal Construction that you have been involved in, based on your project experience? Please indicate your preference by marking **(√)** next to each rate of occurrence (frequency of occurrence) based on the representative numbers listed below;

AD=Strongly Disagree, D= Disagree, N=Neutral, A= Agree, SA= Strongly Agree

Table 5.1

`No.	Factors to overcome effective project scope change strategies	AD	D	N	A	SA
1	Establish a baseline scope early in order to identify and recognize changes					
2	Develop an initial overview of a contracting strategy that ties to the baseline documents for scope, schedule and cost					
3	list the project functions and identify the ultimate objectives of the project					
4	Develop effective scope execution method and controlling system.					
6	Higher independent well experienced scope planner advisory consulting firm to control later project scope change					
7	Develop risk allocation and risk mitigation mechanism during project scope definition					
8	Assign experienced and knowledgeable personnel that are involved in evaluating any proposed changes to make sure changes are beneficial and not detrimental.					
9	Provide continues training to the sector stake holders					
10	Owner must ensure the base scope of works is well defined and must be willing to freeze the scope to establish a benchmark.					
11	Set a change management plan early, integrate with the project execution plan and are communicated to and understood by all party.					
12	Create a special commitment plat form to forcibly apply a penalty to those who initiate change and impact the project baseline.					
13	Build the contractor change accommodating capacity					
14	Facilitate compensation for the sector stake holders to with stand the subsequent change impact.					
15	Reduce the communication gap between stakeholders					

Thank you!!

Annex II: interview guide questions

a. What are the major decision making process considered to change project scope?

b. Which strategies are better to minimize the effect of predefined project scope change in construction projects?

c. What are type of actions should take during project initiation and scope definition minimize the project scope change?

d. What are Major Challenges faced for the project stakeholders during project scope change and what are the action should take?

e. Have you ever come across the dispute resolution between project stakeholders during project scope change, and what are the dispute resolution mechanism?

Items	D	SD	N	A	SA	Total	W	RII	Rank
High foreign exchange rate		2		9	20	31	140	0.90	1
Need of better quality.		2		9	20	31	140	0.90	1
Luck of experience in planning and defining project scope		2	3	14	12	31	129	0.83	3
Least bid winner provision		3	6	9	13	31	125	0.81	4
Incompleteness of contract document	2	2		17	10	31	124	0.8	5
Scarce/ Absences of the required material, equipment, budget and skilled work force.	2	2	3	18	6	31	117	0.75	6
Employer spontaneous interference and frequent change order.	1	2	6	16	6	31	117	0.75	6
Contractor poor work methodology and scheduling.		6	6	11	8	31	114	0.73	7
Inadequate working drawing details	3	5	5	6	12	31	112	0.72	8
Lack of additional fund to the project.		8	5	12	6	31	109	0.70	9
PPA Provision of 30% variation works order right		5	11	11	4	31	107	0.69	10
High current market inflation		9	5	13	4	31	105	0.68	11
Weak professional consultancy service		7	8	14	2	31	104	0.67	11
Lack or/and poor communication between the stakeholders.	2	8	7	7	7	31	102	0.66	13
Design complexity, Change in design and specification by the consultant.	2	2	14	10	3	31	103	0.66	13

Items	NS	MS	AS	HS	ES	Total	W	RII	Rank
High current market inflation	1	1	3	7	9	31	114	0.79	1
decrease project scopes		3	8	10	9	31	121	0.73	2
Delay in completion and increase project cost	1	3	7	9	11	31	119	0.77	2
Causes contract termination	1	5	5	13	7	31	113	0.73	3
Causes Company bankruptcy and shutdown		4	10	10	7	31	113	0.73	3
Slower activity progress		6	5	14	6	31	113	0.73	3
Causes disputes between involved stakeholders,		1	9	14	7	31	120	0.72	4
Disrupt the surrounding environment		7	12	8	4	31	102	0.66	5
Causes non value adding activities such as demolition, slower productivity, affects quality	3	5	7	7	9	31	107	0.69	5
Open chance to apply updated technology, so that the project cost and time will save	8	12	4	5	2	31	74	0.48	6
Create favorable condition for stakeholders to generate additional income	12	6	6	5	2	31	72	0.46	7

Items	NS	MS	AS	HS	ES	Total	W	RII	Rank
Lead to company bankruptcy		1	1	8	22	31	145	0.93	1
Become a means of unemployment, consequently a means of psychological, financial and social problem.		3	11	6	11	31	118	0.80	2
Exposed for high exchange rate and high market price inflation			2	7	22	31	144	0.80	2
Request planned additional Manpower, Equipment, material, technology etc.			7	18	6	31	123	0.79	4
Become a means of disputes among project involved stakeholders and breach of the contract	1	2	8	10	10	31	119	0.77	5
Create higher overhead costs and very less income		2	10	9	10	31	120	0.77	5

Uselessness and dizziness feeling created over the employee due to suspension of the project activity		3	5	12	11	31	124	0.76	7
The intended end service not obtain on time		4	5	15	7	31	118	0.76	7

Increase work quality, so that forced to spend more money than planned.	1	3	6	15	6	31	115	0.74	8
Benefit by extended project completion date	10	9	2	7	3	31	77	0.50	15
Forced to omit, reduce, or/and cancel some predefined scope partially or fully, consequently loss profit.	2	4	5	11	9	31	114	0.73	9
Delay the work performance as a result resource would be idle.		2	11	13	5	31	114	0.73	9
Benefit in generating an additional income due to additional work without bid expenses.	1	3	11	10	6	31	110	0.71	11
Become a means to improve his performance and responsibility to complete the project.	7	5	3	4	12	31	84	0.54	12
Develop good work environment and relationships between stakeholders employee	7	6	10	5	3	31	84	0.54	12
Become a means of endurance for stakeholders to complete the project with in the specified cost and time.	7	6	10	7	1	31	82	0.53	14

Items	NS	MS	AS	HS	ES	Total	W	RII	Rank
Increase work load on contract administration and supervision	1	2	9	14	5	31	113	0.79	1
Become a means of contractual disputes among project involved stakeholders and breach of the contract		5	3	16	7	31	118	0.76	2
Uselessness and dizziness feeling created over the employee due to suspension of the project activity		8	2	12	9	31	115	0.74	3
Increase work load on design modification, review and Bill of quantity preparation	1	3	6	15	6	31	115	0.74	3
Quality inspection work affected.		6	3	16	6	31	115	0.74	3
Forced to deploy an planned additional Manpower, Equipment, material, technology etc.	1	2	5	13	10	31	122	0.73	5

Create psychological, financial and social problem on the project employee.		5	6	15	5	31	113	0.72	6
Benefited in generating an additional income due to additional workload.	1	3	11	10	6	31	110	0.71	7
Benefited by extended project completion date	2	5	7	9	8	31	109	0.70	8
Forced to reduce the consultancy fee due to suspension of activity		10	3	11	7	31	108	0.69	9
Become a means for loss of the job.	6	1	8	11	5	31	101	0.65	10
Develop good work relationships between designer and project supervisory staff	1	10	6	10	4	31	99	0.64	11
Exposed for high exchange rate and high market price inflation	4	9	2	12	4	31	96	0.62	12
Become a means to improve the project performance	2	12	6	8	3	31	91	0.59	13
Become a means of endurance for supervisory staff to complete the project with in the specified cost and time.	2	19	4	4	2	31	78	0.50	14

Items	D	SD	N	A	SA	Total	W	RII	Rank
Set a change management plan early, integrate with the project execution plan and communicate to project designer and supervisor			3	15	13	31	134	0.86	1
Establish scope control process on variation approval" procedures for internal control purposes, however, it is important that a scope of works tracking, measuring and analysis scheme is devised.			2	17	12	31	134	0.86	1
Establish higher independent and well experienced scope planner consulting firm to control later project scope change				22	9	31	133	0.85	3
Assign experienced and knowledgeable personnel that are involved in performing qualitative and quantitative risk process to make sure changes are beneficial and not detrimental				22	9	31	133	0.85	3
Involved higher independent and well-experienced scope planner, tracker and change controller advisory consulting firm to manage scope change.			3	20	8	31	129	0.83	4
Establish a scope baseline early in order to identify and recognize changes			2	22	7	31	129	0.83	4
Develop scope management manual and provide discretions for the procedures to follow in scope planning, management and monitoring and evaluation.			2	22	7	31	129	0.83	4

Develop an initial overview of a contracting strategy that ties to the baseline documents for scope, schedule and cost			7	16	8	31	125	0.81	6
Establish scope plan management on critical project contract documents analysis and get experience in the type of the construction work.			7	16	8	31	125	0.81	6
Owner must ensure the scope base of works is well defined and must be willing to freeze the scope to establish a benchmark.	1			27	3	31	124	0.80	7
Establish risk allocation and mitigation mechanisms during project scope definition.	1			27	3	31	124	0.80	7
Facilitate compensation for the sector stakeholders to with stand the subsequent change impact.			11	18	2	31	115	0.74	9
Facilitate compensation for the stakeholders sector to with stand the subsequent change impact.			11	18	2	31	115	0.74	9
Provide continues training and capacity building to the sector stake holders		5	8	14	4	31	110	0.71	11
Capacity building for the contractor to accommodating the change	2	1	14	12	2	31	104	0.67	12
Create special commitment plat form to forcibly, apply a penalty to those who initiate change and affect the project baseline.	8		2	17	4	31	102	0.66	13
Reduce the communication gap between the stakeholders	9	7	3	11	1	31	81	0.52	14